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Volume 25 Part 2

The Lincolnshire Naturalist

Transactions of the Lincolnshire Naturalists' Union
for 2000, published 2001.

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Lincolnshire Botany
Rare moss animal in Lincolnshire
Bees and wasps of Kirkby Moor
Lincolnshire Natural History in 2000

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ASPECTS OF LINCOLNSHIRE BOTANY TO 2000

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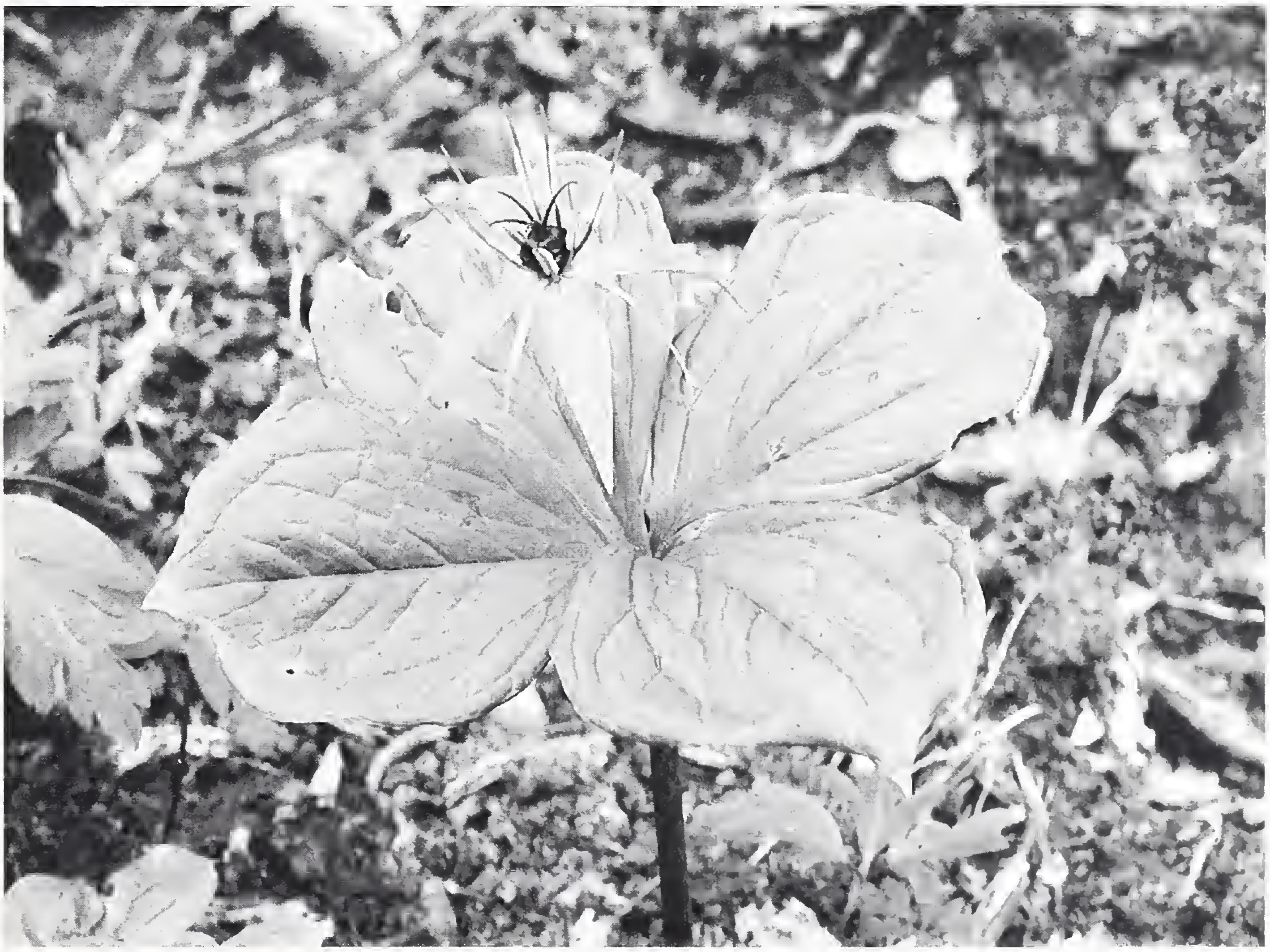
Irene Weston

The historic county of Lincolnshire stretching from Stamford and the Wash to the Humber Bank has been extensively botanised over many years. It is rich in species. To date the all time county list totals around 1650 species *sensu latu* of flowering plants and ferns. This is accounted for by the variety of habitats the county contains. The 1750 habitat map (Gibbons 1975) indicates this variation but now due to the enclosures, intensification of agriculture, drainage of fens and bogs, ploughing up of grassland, afforestation of heathland, quarrying for limestone and ironstone, extraction of sand and gravel and urban development, large tracts of these habitats have vanished. Each of the habitat types on the varying soils produced by the chalky limestone, clay sands and gravels etc. has its own inherent flora and these make up the high total number of taxa. The flora is also changing due to the spread of many introductions and aliens. Botany is not only "a study of pure curiosity" (Rousseau 1979), the recording of plants is a tool both for future monitoring and consultation and an insight into the past.

Lincolnshire Habitats

(a) Woodlands - decreased by over a half since Domesday, these include ancient coppiced woodlands with oak/ash standards which have been maintained through the centuries for the harvesting of many products. These coppiced woodlands contain many ancient woodland indicator species such as primrose, herb-Paris (on more alkaline soil), greater butterfly orchid, wood anemone, lily of the valley and bluebell (emblem of the BSBI - a W. European endemic) and many others, each of these species acting as a dominant



Herb Paris *Paris quadrifolia* - a scarce plant of Lincolnshire's more calcareous woodlands photo I Weston in areas of varying soil types. The small-leaved lime woods in the mid Lincolnshire clay-vale around Wragby/Bardney are a feature of our flora and much research has been done there. The afforestation of the heathlands whilst diminishing the heathland flora, produces a different if somewhat sparse list but which is often rich in the rides with marsh violet and bog pimpernel. Some of the earlier conifer plantings are coming to maturity and being replaced by mixed planting and leaving in many places a core of broad-leaved areas.

Alder carrs also produce their own specific floral list which includes the two golden saxifrages, marsh marigold, tussock sedge, bluebells and red campion. Fen edge woodlands on the sands and gravels have a rich flora. The Tumby and Fulsby woods, the woodland at Kirkby Moor and the Decoys are also rich and include climbing corydalis, ferns and bracken.

Many woodland species such as cow-wheat and yellow archangel are present in Lincolnshire. in limited quantity - but a very rare plant the yellow archangel subspecies *Lamium galeobdolon ssp. galeobdolon* (Plate 1) is found only in 2 Lincolnshire woodlands (at Burwell and Welton) in Britain. May lily is found in one woodland only. Giant bellflower is a northern plant found here and there on the Wolds and only sparingly in the South of the county and nettle-leaved bellflower is a southern species found chiefly on the limestone in the South. Wood barley is found in only four woodlands and mountain melick has not been seen in Broughton Wood since 1964.

(b) Grasslands. These include the acid heaths, calcareous and neutral grasslands. Acid heathlands, once very extensive, are found on the cover sands on the clay and limestone and on the river and glacial sands and gravels. The species are mainly calcifuge but calcareous species occur in patches where the sand cover over the limestone is thin. Because of wet, dry, peaty and flash areas the number of species is high. The Scotter and Laughton area in the NW had some of the richest areas in the county. Sundews, purple moor-grass, heathers and marsh gentian (plate 2) are listed together with marsh cinquefoil, bog St. John's-wort, deer grass and black bog rush. Some of these remain on the Trust Reserves and the recent Forestry Commission surveys at Laughton have shown the re-emergence of the black bog-rush *Schoenus nigricans,* bog St. John's-wort *Hypericum elodes* and butterwort

Bog St John's Wort *Hypericum elodes* - a plant of wet acid conditions. photo I Weston

Pinguicula vulgaris due to management changes. Bird's-foot, shepherd's cress, and smooth cat's-ear are still found.

The ironstone quarrying in the Scunthorpe warrens and commons whilst removing some heathland and species from the area, increases the species list where the limestone is exposed. Wood horsetail *Equisetum sylvaticum* appeared in quantity at Crosby Warren in l984 and both wet and dry areas are producing intensely rich plant communities as more recent LNU meetings and Trust surveys in the 1990's have revealed. Large communities of knotted pearlwort *Sagina nodosa* were found on a newly colonised quarry floor and thousands of bee orchids and marsh orchids were recorded from near the steelworks itself. Risby Warren has a mixture of both acid and calcareous species (where the sands are thin on limestone). Manton, Messingham and Twigmoor have very good lists. Messingham has a very rich flora and species are being re-recorded - for example pillwort *Pilularia,* shore-weed *Littorella* and creeping willow *Saiix repens.* An entirely new species for the county was also recorded here in the 1990's, large wintergreen *Pyrola rotundifolia* (Weston, 1999) which is very rare and disappearing from its Norfolk fenland sites and normally is a plant of N & W Britain. Linwood Warren, Kirkby Moor, Woodhall and Roughton Moor and the moors of Osgodby, Holton le Moor and Nettleton Moor have very rich moorland floras.

The chalk and limestone grassland species include fragrant, bee, pyramidal, man and frog orchids. Also rare species such as pasque flower (plate 3), autumn and English gentian, perennial flax, woolly thistle, clustered bellflower and a range of calcareous grass species. The chalk Wolds and Lincoln Cliff and Heath provide habitats for these but there has been a massive reduction in permanent grassland due to the ploughing up of vast areas of wold and heath. Neutral grassland, mainly on the clays, with its indicator species of green-winged orchid and cowslips, adders-tongue fern, saw-wort, sneezewort and dyers greenweed has also declined in acreage.

(c) Wetlands - The wetland habitats of bog, fen and open water and the man-made habitats of sand, gravel and railway ballast pits ensure a good list of aquatic plants but with the drainage of the fens some of the old natural areas are now seen as cultivated fields of cabbages and onions etc often mixed up with residual daffodils and tulips of previous

Man orchid *Aceras anthropophorum* - a plant of limestone grassland. photo I Weston

Grass of Parnassus, *Parnassia palustris* became extinct in Lincolnshire photo I Weston

years cropping. The bogs in the North around Crowle are important areas for bog rosemary, cranberry and the two cotton grasses, whilst in the Witham, Wash and Spalding fens there are populations of greater water-parsnip, lesser water-plantain and bladderwort It is here that a great number of now extinct plants were found. Frogbit *Hydrocharis morsus-ranae* re-appeared at Burton in 1993 after work on the Reserve, indicating seed bank material. Tragically in I963 the small calcareous bog at Waddingham Common was destroyed and Grass of Parnassus, *Parnassia palustris* became extinct in Lincolnshire. In 1937 it was recorded there in quantity at an LNU meeting. The plant list from the bog included fragrant orchid *Gymnadenia conopsea* ssp. *densiflora*. Grass of Parnassus was also recorded from a small bog at High Toynton in 1950 together with red rattle *Pedicularis palustris*, the latter is also now extinct in Lincs (Gibbons 1975).

(d) Coastal - Without doubt the extensive coastline of Lincolnshire is responsible for a high number of the species in the county list. The varied habitats of saltmarsh, sand dune and freshwater slack support uncommon coastal species - sea heath, perennial samphire, marsh mallow, shrubby sea-blite and sea buckthorn (plate 4)- the latter being common on our coast, but listed as a scarce plant for Britain, as well as populations of marsh orchids (plate 5) and marsh pea (plate 6) in the slacks at the Saltfleetby Theddlethorpe NNR, which are significant nationally. Gibraltar Point has two species of sea lavender and an ever changing flora.

Bulbous meadow grass *Poa bulbosa* , a grass at its northern limit in the UK in Lincolnshire. photo I Weston

The county species list also includes plants at the edge of their geographical distribution. Examples of plants at their North or N. Eastern limit in Britain include nettle-leaved bellflower *Campanula trachelium* (N), man orchid *Aceras anthropophorum* (N), bulbous meadow grass *Poa bulbosa* (N), round-leaved Fluellen *Kickxia spuria* (N), violet helleborine *Epipactis purpurata* (N), small cord-grass *Spartina maritima* (N), long-bracted sedge *Carex extensa* (N) and bastard-toadflax *Thesium humifusum* (N and European N). At the S. and S.E. limit of distribution in Britain are stone bramble *Rubus saxatilis* (S.E.), bog rosemary *Andromeda polifolia* (S.E.) and saltmarsh flat-sedge *Blysmus rufus* (S.E.). Saltfleetby Theddlethorpe NNR and Cleethorpes each have *Carex extensa* and *Blysmus rufus*. As these and others (Gibbons 1975, for a full list) are at the edge of their distribution range they are vulnerable. Many limit plants have become extinct in the county. Significantly many are now found only in the NNRs and Trust Reserves together with others which have become rare through loss of habitat.

"The law doth fine the man or woman
Who steals the goose from off the common
But lets the greater felon loose
Who steals the common from the goose". (Anon.)

(e) Aliens and Arable weeds - The species list includes many alien taxa - historically from flour mills, docks etc. and also newer species which are spreading over the county - e.g. blue boy - slender-spreading speedwell *Veronica filiformis* which is now found in churchyards, parkland, lawns and gardens.

The rarer arable weeds though much reduced in quantity by the use of herbicides do crop up from time to time- Venus looking-glass *Legousia hybrida*, night-flowering catchfly *Silene noctiflora*, cornflower *Centaurea cyanus* and corncockle *Agrostemma githago* are recent examples - all reported in the Transactions of the L.N.U.

Corncockle *Agrostemma githago* photo I Weston
one of our rarer arable weed.

The History of Recording

The earliest reports relating to the Flora of the county were vague with no lists of plants. The Flora of Lincolnshire (Gibbons 1975) quotes for example - Henry of Huntingdon c.1134 - “delighted in the scenery of the apple orchards” and described "the fenne country as being rich and as plenteous and beautiful to behold with many rivers down to it and garnished with a number of meres both great and small which abound in fish and fowl and is finely adorned with woods and islands" and William of Malmsbury c.1140 the fens "were a very paradise - a heaven for the delight and beauty thereof" - now quite gone and cabbages and tulips the order of the day. In other parts of Lincolnshire the Domesday woodland map I086 indicates the wealth of woodland in the county at the time.

The earliest Lincolnshire plant record came in a communication from Dr. John Harvey of Frome in Somerset. He was researching the MSS of a 14th Century Dominican monk Father Henry Daniel working from Stamford. He gives a specific Lincolnshire record for a casual, great bur-parsley *Caucalis latifolia* 1 mile N. of Stamford towards Lincoln. "Might I never find this herb, but only in Lincolnshire",(Gibbons and Weston 1985). It is a British native and was recorded next from Witham on the Hill in 1674 by Parkinson and by Mrs. Eva Dunn at Elsham in l957. Father Daniel describes the plant in detail "Plant is like a curious candlestick 1-2 ft. high with prickly fruits - every branch a flower - mickle toward a cockle flower. Some call it Moises candlestick or the Candelabrum Moisy." The cockle *Agrostemma* he obviously knew well and was probably, from his inference, very common.

In 1597deadly nightshade *Atropa belladonna* was recorded in Gerarde's Herbal as a medicinal plant from the "County of Holland" and later is included in the East Fen List. It was found in Holbeach in 1982 by Mrs I. Weston in a deep dyke near the Agricultural College. Here peppermint was grown up to 1927 and the farm is called Distillery Farm. Caraway and woad are also mentioned from this area and relic plants crop up.

For the next record we have to go to Thomas Johnson's amended version of Gerarde's Herbal 1633. Thomas Johnson was an apothecary living in London but who had lived in Lincolnshire as a boy. He travelled to the North of England and found marsh gentian *Gentiana pneumonanthe* (plate 2) - new to the British Flora - "this plant I never found but once and that was on a wet moorish ground 2 or 3 miles this side of Caistor and as I remember, the place is called Netleton Moor (Nettleton)". Thomas Johnson very much enlarged Gerarde's Herbal of 1597 (Thompson's Gerarde) which established his reputation as a botanist. It was called Gerarde's *Emaculatus* (Gerarde with the mistakes removed!). His important works *Mercurius Botanicus* were some of the very first publications in Britain which enumerated the plants found on botanical journeys in lists from well defined areas. He was a Royalist who was shot and died at Oxford in 1644 in the Civil War. His works are described by H. Wallis Kew and H.E. Powell in Thomas Johnson Botanist and Royalist. London 1932 8/6d. Wallis Kew was a former President of the LNU who has also written up John Ray and Martin Lister in Transactions. Copies of both Gerarde's Herbals can be seen in the Wren Library in Lincoln Cathedral.

Next came Johannes Rains - John Ray - described by Linnaeus as "The incomparable Botanist" by Gilbert White as "The excellent Mr. Ray" and by Rivinus of Leipzig as "Easily the first of all botanists who have ever lived". From 1658 the Rev. John Ray travelled extensively over the country. His botanical journeys were called "Mr. Ray's Itineraries". The journal of Itinerary II, a 1661 journey to Scotland, involved passing through Lincolnshire. He went via Crowland, Spalding and Kirton in Boston. There he remarks on Kirton Pippins "a wholesome and delicious apple" (not now known) - *Pippinum kirtonianum* (always a Latin tag). He went via Boston to Tattershall - where he too recorded marsh gentian. He found it also on a heath a little beyond Wrawby on the way to Hull. The finding of marsh gentian was one of Ray's outstanding achievements although the first British record was made by Thomas Johnson. At Boston he recorded houseleek "they plant it in great plenty on the roofs of thatched houses" and near Bardney "we passed very bad ways and had like to have been laid fast in a place called My Lady's Hole in a rotten marsh ground near Tupham Abbey". They looked in at the cathedral in Lincoln, where the choristers had no surplices but only gowns with capes faced with lambskin, and heard Great Tom (cast in 1610) and then moved on from Brigg to Barton on Humber where they ferried themselves and horses over to Hull and then on to Scotland.

Ray's achievements have never been granted true recognition, partly because he wrote in Latin. His catalogue (*Catalogus Plantarum circa Cantabrigiam nascentium*) is the first study on plants of an English county and marks an epoch in the history of botanical recording - i.e. the first county flora.

Ray was at Cambridge - deacon and priest. Ray's *Methodus* and his *Historia Plantarum* were amongst many of his works. Charles Raven has pointed out in his "Life of John Ray" that Ray's classifications were based on comparative morphology. He in fact distinguished monocotyledons and dicotyledons and worked out the natural groups of plants.

Ray preceded Linnaeus by about a century. Linnaeus gave us the binomial system and a classification based on counting the stamens and carpels of plants but Ray's system was based on natural grouping. Ray wrote in Latin before Linnaeus' binomial system and therefore his names are long and cumbersome. His Lincolnshire records include some from his 2nd Itinerary 1661 published in 1670.

- Small-leaved lime - *Tilia foemina folio minore* "It abounds in the county of Lincoln about Horncastle to Wragby, in the woods".
- Marsh gentian - *Gentiana palustris angustifolius* and *Gentiana autumnalis pneumonanthe dicta* particularly in Tattershall Park - "these are pneumon which had a beautiful blew flower and is perpetual. It grows plentifully in many healthy and moist grounds in Lincolnshire and the east side of York and flowers in the latter end of August".
- Golden dock *Lapathum folio acuta flora aurea* - *Rumex maritimus* he found about Crowland in fens up and down Holland.

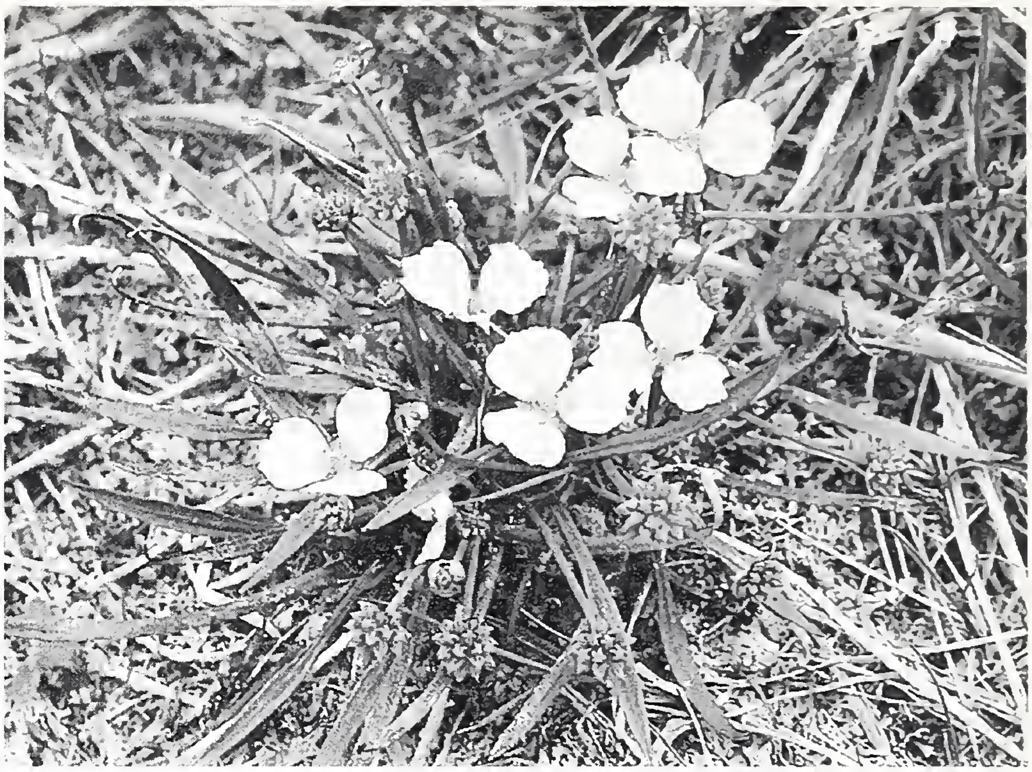
In 1666 Dr. Martin Lister, a friend of Ray, "rode from Cambridge to get away from the plague which was raging there" - to Burwell, where his father Sir Edward Lister lived. His works and records have been written up by H. Wallis Kew and more recently by Mr. C.J. Sturman of Louth (1984) who worked on Lister's MS at the Bodleian Library. "In 1666 on June 18 Mr. Wray, Mr. Dent and I went out asimpling in Cambridge" but later, after Ray and Dent went back to Cambridge, Lister came up to Burwell on his own. He recorded on the journey, at Burwell and also at Wainfleet on his return. New records were given in the Supplement to the Lincolnshire Flora with a few more examples from the full transcript by C. Sturman of the Lister MS. Some records predate the first records in the Lincolnshire Flora by more than a century.

- *Orchis alba odorata minor* - *Spiranthes spiralis* autumn ladies tresses - on the lanes near the house.
- *Lagopus vulgaris tenuifolius* - *Trifolium arvense* hare's foot clover - upon the road beyond Horne-Castel.
- *Solanum sive solatrum vulgare* - *Solanum nigrum* black nightshade - this plant I saw plentifully in the road from Burne to Tatsall.
- *Lactuca sylvestris costa spinosa* - *Lactuca serriola* prickly lettuce - in

"Orchis alba odorata minor" - autumn ladies tresses *Spiranthes spiralis* photo I Weston

Burwell and its vicinity.

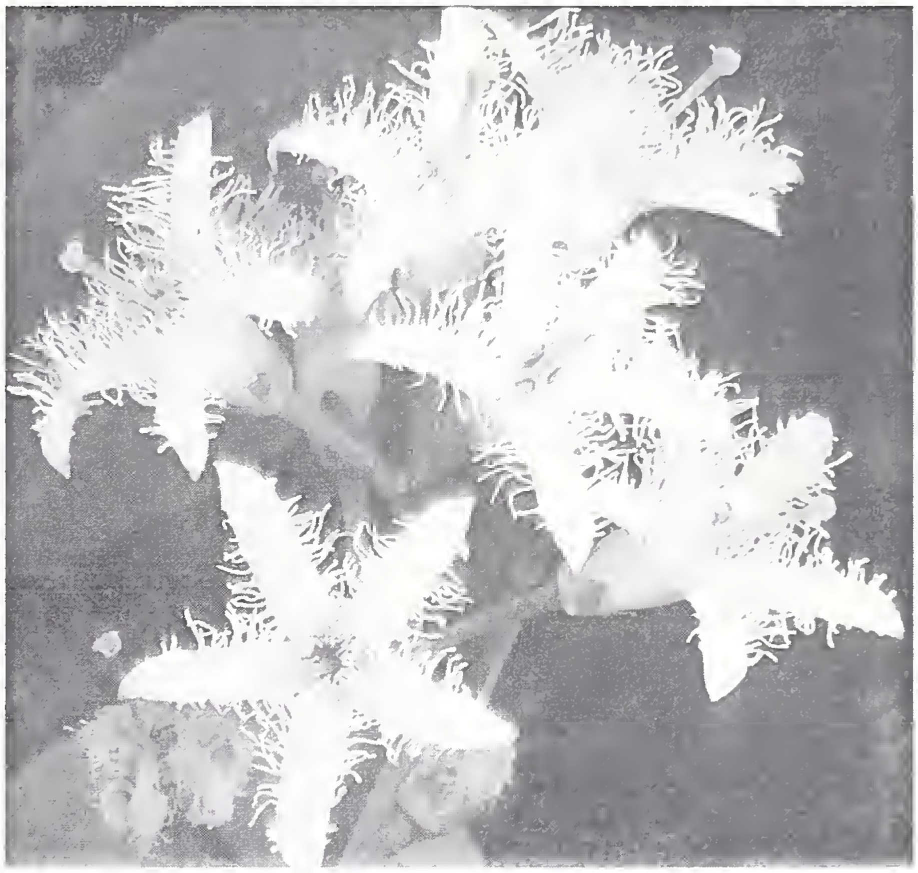
- *Alsine tenuifolia* - *Minuartia hybrida* fine-leaved sandwort - all the walkes in the garden overgrowne with it, everywhere nere the house.
- *Plantago aquatica minor* - *Baldellia ranunculoides* lesser water plantain.
- *Elatine folio acuminata*- *Kickxia elatine* and *spuria* - fluellens amongst the oats in a ground broke up.
- *Filix mas non ramosa sive dentata* - *Dryopteris filix-mas* male fern - on the ditch banks as we go to the park. This predates the first record in the Flora, 1847 Saleby. Dr. Grantham, by 181 years.
- *Eupatorium aquaticum folio intergro* - *Bidens cernua* nodding bur-marigold - in the ford by Kettsby and in the Fens.
- *Juncus laevis glomerato flore* - *Juncus conglomeratus* compact rush - all the wood over. First record in Flora 1815.
- *Melampyrum sylvaticum flore lutea, sive satureia lutea syl.* - *Melampyrum pratense* cow-wheat - in woods up to the stand on the left hand from the house.
- *Sium discoridis sive pastanica aquatica major* - *Sium latifolium,* great water parsnip - in the ditches everywhere.
- *Caryophyllata vulgaris major flora* - not a carnation(!!!) - the hose-in-hose form of *Geum rivale* "the Avens with the large flower in Tetford Wood"
- From Wainfleet marsh mallow *Althaea officinalis*
- *Kali geniculatum sive salicornia* samphire everywhere within and without the banks.
- *Rhamnus catharticus littoralis* - *Hippophae rhamnoides* - Sallow thorn or sea buckthorn - on the sea banks - on Lindsey coast plentifully. Even now it is very much a North Lincolnshire plant. The first record for this is 1669 (Gibbons 1975).



"Plantago aquatica minor" - lesser water plantain *Baldellia ranunculoides* . photo I Weston

Caryophyllata vulgaris major flora - the hose-in-hose form of *Geum rivale* recorded in Tetford Wood in 1666 - the same year as the fire of London. photo RS Key

Lister wrote to Ray about many things - about asparagus from the dunes at Mablethorpe "not to be distinguished by the Eye from that which is seen in our Gardens but is intolerably bitter." Gerarde and Johnson had both recorded asparagus from marsh grounds in the county, at Holbeach and Moulton, and Lister was evidently referring to this when, amusingly, on a journey to Paris in 1698 he was put in mind of the wild sparagrass which grows plentifully with us "By the bitter Sparagrass in Paris". - and in 1669 he told Ray of the amber and jet on the Lindsey coast that he bought from fishermen's wives at Theddlethorpe at 3d. an ounce.


Bog bean *Menyanthes trifoliata* was initially regarded as a *Trifolium.* photo RS Key

In Ray's notes bog bean *Menyanthes trifoliata* was called buckbean *Trifolium palustre,* taking the Latin generic name from the trifoliate leaf and deadly nightshade *Atropa belladonna* was *Solanum lethale. Listera* as in *Listera ovata* is a generic name in honour of Martin Lister.

Many records were made in the early 18th century by various eminent botanists. These were mainly doctors and include Dr. Christopher Merrett, Dr. Patrick Blair, Dr. Leonard Plunkett, Dr. Richard Pulteney, Dr. Vincent Bacon and Dr. W Stukely of Holbeach and Stamford whose 1724 list of rare plants contained records of sundew and butterwort from Tattershall. In 1780 Professor John Sibthorpe of Lincoln gave the best list of plants in the fens including cranberry *Vaccinium oxycoccus.*

Arthur Young came to Lincolnshire in 1797 and visited Sir Joseph Banks at Revesby. Writing in his General View of Agriculture in the County of Lincoln in 1799 he describes his visit. I quote "There are about 300 acres of land in the East Fen where cranberries grow in such abundance as to furnish a supply for several adjacent counties. The land is chiefly common belonging to Wainfleet and Friskney called the Mossberry or Cranberry Fens. *Empetrum* - crowberry and several other mountainous plants are found on the cranberry ground and in no other part of the fen. They (cranberries) are so plentiful that one man has got 9 score pecks per season - at 5/- to 7/6 per peck to pickers." Thompson 1824 reckoned 4000 pecks per season for the cranberry harvest. Young stated "Sir Joseph Banks had the goodness to order a boat and accompanied me into the heart of this fen, which in this wet season had the appearance of a chain of lakes, bordered by great crops of reed *Arundo phragmites.* It is in general 3-4 ft. deep in water and in one place a channel between two lakes is 5-6ft." His list includes *Cladium mariscus, Menyanthes trifoliata, Sonchus palustris, Senecio palustris, Hydrocotyle* and *Bidens.* He gave vivid descriptions of the varying habitats - deep moss peat with oak, pine and birch on higher ground. Sir Joseph Banks experimented in London with cranberries, knowing their provenance in the East Fen and the trade in London.

Some of the peaty areas perhaps could be likened to certain areas seen in Norfolk today at Dersingham Fen and Royden Common. After drainage very few cranberries were harvested and after 1810 fetched 30/- to 50/- per peck (Oldfield 1829). Nowadays most cranberries come in from the U.S.A. where much research has been done on the native species. Over 100 varieties are named of which four are in current production. The American name is craneberry - each flower looks like the head of a crane - a symbol of peace and thanksgiving and is said to have been used at the first Thanksgiving in 1621.

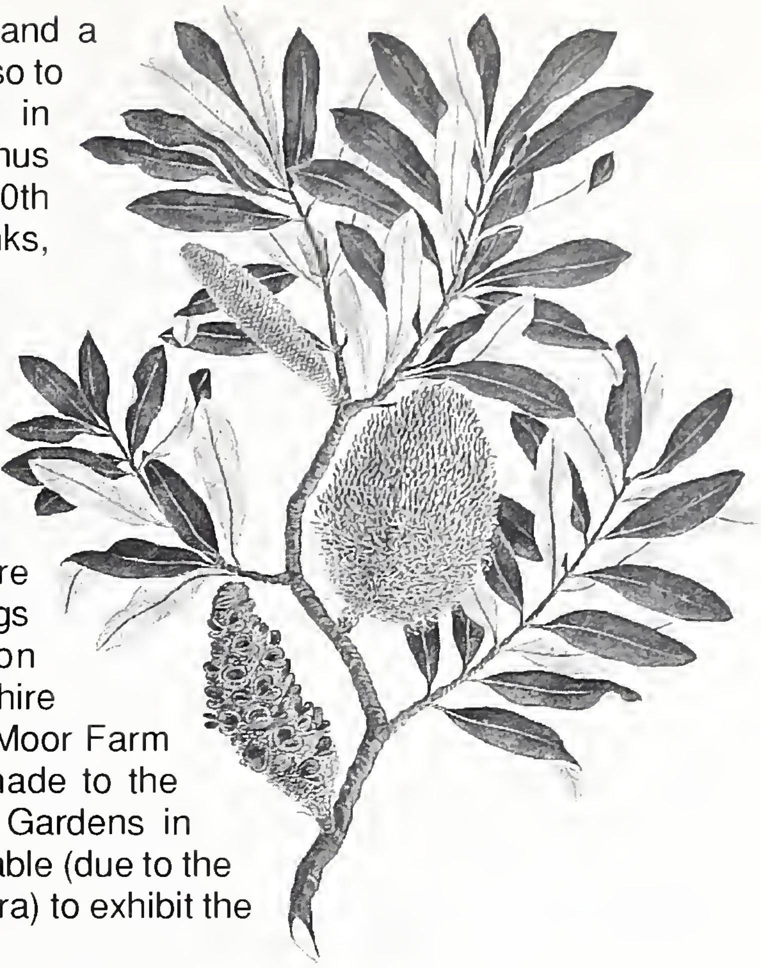
Cranberry was recorded in Lincolnshire in 1976 at Manton Warren over about 7 acres of bog, the area being more accessible due to that year's drought. It was also found at Crowle waste in 1981.

Sir Joseph Banks, Lincolnshire's most famous botanist - painting by Sir Joshua Reynolds in 1773

Sir Joseph Banks of Revesby 1743--1820 is without doubt Lincolnshire's most famous botanist. Although a lot of his Lincolnshire records were dispersed, his international botanical exploits make him perhaps the most famous British botanist. Linnaeus addresses him as *vir sine pare* - a man without equal. Linnaeus, though older, was the most prominent contemporary botanist and it was the finest compliment which Banks could have been paid.

Charles Lyte opens his chapter on Sir Joseph Banks in "The Plant Hunters" (Lyte 1983) with "If John Tradescant the Elder was the founding father of plant collectors then Sir Joseph Banks was definitely the man who turned plant hunting into a profession. His greatest passion, botany, dominated his long full life. Gilbert White writing to Thomas Pennant in 1768 after the Endeavour sailed wrote "When I reflect on the youth and affluence of the enterprising Gent I am filled with wonder to see how conspicuously the contempt of danger, and the love of excelling in his favourite studies stand forth in his character - if he survives, with what delight shall he peruse his Journels, his Fauna, his Flora." Professor W. Stearn at Kew has remarked "The Collection far surpassed any hitherto brought into Europe." One of the greatest services Sir Joseph Banks made was in relation to the acquisition of the Linnaean Collection by James Edward Smith, later to be held by the Linnaean Society of London. The other was in stimulating and funding plant collectors to collect for Kew, his ambition being to turn Kew into a storehouse for every known plant. He became unofficial Director at Kew by Royal appointment.

Banks' "Florilegium" has now at last been printed - at great cost - and stands as a record of the Endeavour journey 1768 --1771 and a tribute to his botanical explorations and also to the art of botanical illustration. It is in Australia that plants of the large genus *Banksia* are found. In 1993, the 250th Anniversary of the birth of Sir Joseph Banks, a large programme of events was held across Britain. These included in Lincolnshire the A.G.M. of the BSBI. This was held at Riseholme College where lectures were given by Harold Carter, biographer of Sir Joseph, by Mr David Robinson on the Lincolnshire connections and by Mr A.E. Smith on Nature Conservation in Lincolnshire. Field Meetings to Revesby, Forestry Commission woodlands at Wragby and the Lincolnshire Wildlife Trust Reserves at Little Scrubs, Moor Farm and Kirkby Moor were held and visits made to the Banks Conservatory and John Dawber Gardens in Lincoln City. The Usher Gallery was also able (due to the interest of Professor M. Pitman of Canberra) to exhibit the Celia Rosser collection of *Banksia* paintings after its period at Kew. In March 2000, a new Commemorative Plaque in the Cathedral was dedicated to Sir Joseph Banks by H.E. Philip Flood, High Commissioner for Australia - a tribute long overdue.



Painting by Joseph Banks of *Banksia integrifolia*, the Australian genus which bears his name

As a boy and in later years Sir Joseph Banks must have been very familiar with the Lincolnshire Flora. A full list of his Lincolnshire finds would have been invaluable. The Botanists Guide (Turner and Dillwyn 1805) lists only the rarities he recorded including - "*Lathyrus palustris* in the meadows in the East Fen in abundance, where they are most likely to be overflowed - *Selinum palustre* in the East Fen in vast plenty, almost the only umbelliferous plant that grows in the immense common meadows here - *Cicuta virosa* in the East Fen chiefly on the edges of the narrow channels called Rows which communicate the Deeps with each other - *Cineraria palustris (Sonchus palustris*) in the East Fen, in some years in vast abundance, in others very scarce -*Statice reticulata (Limonium bellidifolium)* where the sheep bite close, saltmarshes near Freiston and Leverton - *Teucriun scordium* in the East Fen, often near places where the geese frequently land - Asparagus in rich meadows near the beach - *Silene anglica* (*Silene gallica*) frequent in autumn among turnips on the Wolds - *Carum carvi* abundant in the marshes near Boston on the sides of the Witham, within the banks near the Grand Sluice - *Bupleurum tenuissimum* on the sea banks below the town of Boston - *Atriplex pedunculata* Boston purslane near Skirbeck Yard ½ mile from Boston on the roadside between Fossdyke and Crosskey Washes, in some years vastly abundant, in others difficult to find - *Crambe maritima* among the sand hills on the coast in abundance."

Other Lincolnshire records in the British Museum herbarium, but with no localities, are *Hypericum elodes, Radiola linoides, Silene maritima, S. noctiflora, Salicornia* (perennial and annual) and *Myosoton aquaticum*. There must have been other Banks records.

The Turner and Dillwyn "Botanists Guide through England and Wales" of 1805 lists 74 plants for Lincolnshire with good locality notes.

As is seen in the Flora, there were many recorders active in the early and mid 1800s. I have selected a few mainly because of the specific site details given of some of the rarer plants. Dr John Ward of Horncastle made a local list of 119 plants which included *Drosera intermedia, Pinguicula vulgaris* and *Gentiana pneumonanthe* from Tattershall - *Jasione montana* and *Vaccinium oxycoccus* from Horncastle Moor - *Hypericum elodes* on a bridle road from Hemingby and *Linum perenne* from High Tointon. This was published in 1820 in George Weir's "Historical Studies of the Town and Soke of Horncastle."

Rev. J.F. Wray made a collection from Bardney which was found at Ipswich. It included the records of Miss C. Coutley, a Suffolk botanist, who recorded fen violet *Viola stagnina*, a first for Britain, from Boultham in Lincoln in 1833. A specimen was sent by Dr J. Nicholson to Sir William Hooker for confirmation. This species was recorded up to 1936 from Fiskerton.

In 1847 Rev. J.K. Miller's list of 89 plants near Gainsborough was printed in Sir Charles Anderson's "Short Guide to the County of Lincoln." The names are early versions - *Listera nidus-avis* bird's nest orchid and *Orchis muscifera* fly orchid from Broughton Wood, *Rhinanthus major*, (plate 7) large bushy yellow nettle from near Crowle and near Blyton Carr, *Utricularia vulgaris* bladderwort from Scotton Common, *Rhynchospora alba* white beak rush from Laughton Common and Twigmoor, *Parnassia palustris* from Ferry Flash and near Craiselound, *Littorella lacustris* from Laughton Common, *Cladium mariscus* prickly twig-rush from marshes between Haxey and the River Idle and *Carum carvi* caraway from meadow lands and marshes near Gainsborough. The publication also quotes Rev. H. Wollaston's record of great fen ragwort - birds tongue - *Senecio paludosus* "on the banks of ditches near Braford Water, half a mile from Lincoln". This was taken together with a few very tantalising records from the English Flora of Sir James Smith.

White beak sedge Rhynchospora alba was known from Laughton & Twigmoor as early as 1847. photo RS Key

In 1985 Mr. Chris Sturman sent me details from the work of Rev. John Mossop c.1840. His records include *Pedicularis palustris* and *Menyanthes* from Northcoates bog, *Parnassia palustris* from Skendleby and *Stratiotes aloides* from drains at Saltfleetby St Peter.

C. Watson published " The New Botanists Guide to the Rarer Plants of Britain" in two parts in 1835 and 1837 and lists 76 plants from Lincolnshire. The list is based on Turner and Dillwyn's "Botanists Guide" of 1805, but there are many name changes which are confusing viz. - Milk parsley *Selinum palustre* to *Peucedanum palustre* - Sea pea *Pisum maritimum* to *Lathyrus pisiformis* from Ingolm Mills, Peebly beach; this plant now called *Lathyrus japonica* is extinct in Lincolnshire. The record was probably the one referred to in the Flora (Gibbons 1975): 1640. Ingoldmels, Parkinson.

In 1851 Watson visited Lincolnshire and in 1868 put a full county list into print in "Cybele Britannica". He later devised the system whereby Britain was divided into 112 Vice-counties; South Lincolnshire being VC53 and North Lincolnshire VC54. These Watsonian Vice-counties were used in the "Comital Flora of the British Isles" by G.C. Druce in 1932 and are still in use today. BSBI recorders are appointed for the Watsonian Vice-counties.

Watson was helped to compile vC lists in Lincolnshire by Rev. Canon Fowler, the fourth President of the L.N.U. in 1898. Canon Fowler published a series of ecologically-based lists in both "The Phytologist" and "The Naturalist", details of these are given in the bibliography of the Flora. Canon Fowler communicated with Dr Lees for the Botanical Record Club and for the London Catalogue. Recording was coming into vogue and publishing also. His greatest discovery was *Selinum carvifolia*, new to Britain from Broughton Wood. It was last seen in the same spot in 1931 at an L.N.U. meeting, when an uprooted plant (the only one there) was presented to a furious Miss Gibbons with "is this the plant you are looking for?". I'm glad I wasn't there!

Canon Fowler found *Carex curta* at Linwood Warren a year before his death. Of Canon Fowler it was written "The Canon is one of those who think that to be merry is as essential as to be earnest." His humour provoked side-shaking laughter at meetings.

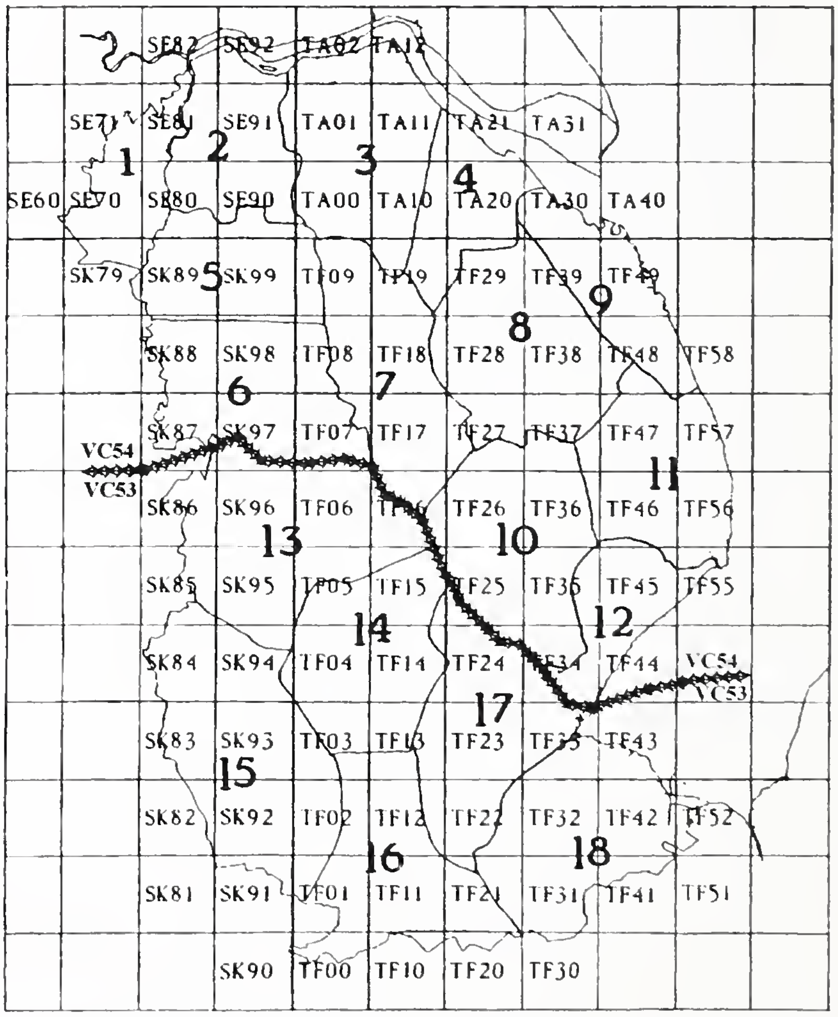
Dr F.A. Lees made a terrific impact on the Lincolnshire records. He had been President of the Yorkshire Naturalists' Union Botanical Section, had written the monumental "Flora of West Yorkshire" and was editor of the Botanical Locality Record Club. He came to Market Rasen in 1876-1878 to practise and to botanise. He updated the two editions of James Britten's "Full Lists of Plants of Lincolnshire" published in White's Directories of 1872 and 1882. In 1892 he published his own "Botany and Outline Flora of Lincolnshire" in Whites Directory and Gazetteer of the county. This consisted of a paper on the Botany of Lincolnshire, a botanical bibliography of all known references, a list of herbaria and the plant list itself with dates of first records and recorders done in family order with vice-counties. 996 flowering plants and ferns, 147 mosses, 25 hepatics and 47 lichens are listed. Twenty-nine pages of sheer gold. His 1893 list was not published but the MS is at Cambridge Botany School.

Lees account of his own area provide interesting descriptions of past glories. For example the common wintergreen *Pyrola minor* - "This forms one of the most salient features in the fir woods upon the greensand stratum. In dozens of places about Rasen its neat foliage carpets the wood in great patches and when in bloom its thousands of waxy bells are extremely ornamental." He laments on the absence of bilberry *Vaccinium myrtillus* - "this plant of highest census number (i.e. found in a great number of VCs) is wholly absent from the Shire. The bilberry a thing very difficult to account for, seeing its abundance in the head-waters of the Trent and the wide sandy commons suitable for it in the northwest of the county". Canon Claye in 1917 later recorded bilberry "growing with *Solidago* on the big barrow at Broughton by Brigg 4 x 3 yards". The postcard record said "Eureka !!!". Miss Gibbons recorded it at Linwood Warren in 1929!!! Lees also commented on the absence of *Cardamine amara* and *Carex pendula* from the county, both of which were recorded later. In fact there are records of *Cardamine amara* from both North and South Lincolnshire reported in the Peacock 1894 "Critical Catalogue" - north, Mablethorpe, J. Larder 1887 and south, Stamford by the side of the Welland, near the waterfall, Browning 1838.

The Lincolnshire Naturalists' Union was formed in 1893. Its purpose to record, conserve and publish details of the flora and fauna. This it has done to this day - meetings held regularly with articles published first in "The Naturalist", then its own "Transactions" and now in "The Lincolnshire Naturalist".

In 1893 Rev. E.A. Woodruffe-Peacock was a founder member and in December 1893 his Locality Register contained 50,000 old and new records and the county herbarium, housed in Lincoln, held between 3000 - 4000 proof and type specimens collected from many recorders. He became botanical secretary in 1895 and President in 1905. He published "A Critical Catalogue of Lincolnshire Plants - From all known Sources" in a series of 14 papers in the "The Naturalist" from 1894 - 1900 in which he paid special tribute to Mr J. Burt-Davey, Mr Arthur Bennett, Mr F.A. Lees and Rev. W. Fowler. The critical catalogue is a mine of information on status and site for many species and compulsive reading - for example, from the second paper *Sagina nodosa* "found growing on the north side of Bourn church above the leads" and from the fourteenth paper, the saga of *Euphorbia portlandica,* a specimen of which was given to Mr Lees by a lady in a railway carriage returning from Skegness! This is the only record from the east of Britain (Stewart et al. 1994).

There is also the record of *Crithmum maritimum* by Dr W. Stukely, which Peacock regarded as a mistake in the Pishey-Thompson list, but this did appear at Gibraltar Point in 1962 and was washed away by 1967, so may be the Stukely record should stand. *Oenanthe peucedanifolia* (*O. silaifolia*), recorded from Quadring, Spalding Dr R. Deakin 1837-8 and listed as a mistake in the checklist and omitted from Miss Gibbons Flora was found over a large area on Lea marshes near Gainsborough in 1990 and regarded as new to the county.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Recording divisions, vice-counties and hectads in Lincolnshire

In 1895 Peacock published his paper on "The Soils and Natural History Divisions of Lincolnshire" which was the starting point for the botanical recording scheme for the flora. The paper was originally published in "The Naturalist" and then reprinted as a pamphlet for the LNU. This consisted of a soil map for the Divisions, a list of divisions and sub-divisions and a gazetteer (price 1/-). The county was divided into 18 divisions, 12 for VC 54 and 6 for VC 53.

"A Checklist of Lincolnshire Plants" was published by Rev. Woodruffe-Peacock in the L.N.U. Transactions of 1909. The list was drawn up with the help of Rev. W.W. Mason, Miss C. Stow, and Messrs A. Bennet, J. Britten, W.H. Beeby, F.A. Lees and Canon Fowler and dedicated to "The most consistent of Lincolnshire botanists" - The Rev. Mason. Each plant was ticked off for the divisions in which it occurred. These divisions were described by Miss Gibbons in her Presidential Address to the Union in 1939 and in the Flora.

Peacock's own "Rock Soil Flora" was too vast to be published at the time but his MS is at the Botany School Cambridge. His was an ecological flora - the first of its kind. The detail can be seen in the stand-in Presidential Address he gave in 1916 entitled "The Flora of Lincolnshire Sequence Selection" where he included a typical species monograph - Bracken *Pteridium aquilinum* - extending to some eight pages. He published "Lincolnshire Folk Names for Plants" in Lincolnshire Notes and Queries 1894 - 1897 where again some localities were given. Entries include: *Saxifraga tridactylites* rue-leaved whitlow grass - *Isatis tinctoria* woad,-"The Wads or outlying farmsteads of Great Cotes are so called as I believe from the large quantities of woad once grown there" - *Carex arenaria* catbands from the inland dunes at Hardwick Hill and the term kindle-brake or lightfire used for the dried fronds of bracken used as kindling.

A full list of his writings is given in the Bibliography of the Flora based on a paper by Professor M.R.D. Seaward in 1971. Mrs Eileen Elder edited the Peacock Word Books for Scunthorpe Museum in 1977 and she sent photocopies of his word card index to Mrs Gigi Crompton at Cambridge in 1982. The Early Locality Plant records for the Critical Catalogue were kept on the same cards. I find these of enormous interest and of great value as the sites are detailed for some of the rarer records. *Stellaria palustris* - between Willingham and Normanby in the right hand hedge - on Laughton Common in the Peacock Hole. *Equisetum sylvaticum* - Lea Wood. *Rhynchospora alba* - Laughton Common. *Pyrola rotundifolia* - "In the lane leading through fir plantations to Laughton Common in the ditch on the left hand, about 100 yards from the white gate coming from Green Hill Farm. Rev. Peacock adds, "the only Lincolnshire record is for *Pyrola minor*". In view of the discovery of the new site for *Pyrola rotundifolia* in 1998 from the nearby Messingham reserve, one wonders whether this could be a the first record of *Pyrola rotundifolia* in Lincolnshire. *Triglochin palustre* -near Green Hill Farm going to Laughton Grange.

In the 1915 Transactions the Reverend writing on the East Fen states that "no full list of the plants in the East Fen was written whilst it still existed in its pristine glory". He compiled a list from all known writers including Banks, Young, Oldfield and Thompson as well as herbarium specimens and records from nearby dykes and field drains. The list totalled 180 species. They included *Sonchus palustris, Teucrium scordium, Peucedanum palustre, Equisetum hyemale*, *Lathyrus palustris* and *Hydrocharis*. In the middle of the article he discusses "the mistakes" mainly from the Thompson lists and the case of pipewort *Eriocaulon septangulare*. This was deleted from the checklist and Miss Gibbons and I discussed it for the Flora. It was felt that the South Lincolnshire name of toadpipes for *Equisetum* species could have been the cause for confusion and so it was omitted. This short section also gave a very detailed locality for the Boston purslane *Atriplex pedunculata* near Skirbeck churchyard, L. Plukenet 1691. A plant not seen in Britain since 1938 until it was refound in South Essex in 1987.

In the same article he writes of creeping marsh marigold *Caltha radicans* from Scotton Common recorded by Mrs E.C. Fowler. It produces small flowers, on the end of each branch and is a plant of the north and west uplands. In the 1916 Transactions he describes it as the "most wonderful of anything for years - I suppose duck carried it from its northern home". These are the surprises one gets in recording.

Rev. Woodruffe-Peacock was taken on his earliest rambles when he was three years old. In 1863 when he was five he remembered finding ling, cranberry, marsh gentian, marsh helleborine and creeping willow at Brumby West Common. His cranberry record for 1865 is in the Flora. Rev. W.W. Mason was botanising at that time and kept lists for all the eighteen divisions. His register was immaculate and he kept it until 1932. It was later added to by Mr T. Baker, Mr A. Smith and Miss E.J. Gibbons. Other L.N.U. members and visitors greatly added to the divisional lists. Miss Catherine Stow was the first lady President of the L.N.U. in 1914 at the onset of the first world war. She worked as a V.A.D. throughout the war at the Grantham Hospital and had recorded *Nardurus maritimus* (now *Vulpia unilateralis*) from Carlby at an L.N.U. meeting in 1903 - a grass new to Britain.

Mr Arthur Smith and Mr Tom Baker added to the divisional lists and Herbarium and kept up a flourishing Wild Flower table at the Lincoln Museum. Rev. F.L. Alston recorded alien plants from the chicken farm at Woodhall Spa 1917 - 19, some new for Britain. At this time the L.N.U. Transactions continued to publish reports of Field Meetings and other current records. In 1935 the Sectional Officers Report by Mr F.T. Baker included details of the meeting in Broughton Woods when a whole series of Mediterranean aliens were found. These included *Althaea hirsuta,* which still appears from time to time. This species was recently the subject of a national Plant Life - Back from the brink Project and the 1935 report was invaluable.

In 1939 Miss E.J. Gibbons became President of the L.N.U. and gave as her Presidential Address "Notes on the Lincolnshire Flora". At the end she made a plea to all flower lovers not to exterminate rare plants. "Do not pick even one flower unless there are at least five others of the same kind in sight" - this was long before the conservation legislation came into force. Miss Gibbons came to Lincolnshire as a child, to the lovely estate of Holton le Moor. She was influenced in botany by her mother and aunts and followed the examples of her two sisters, Mary and Dora, in recording the plants at Holton. She became a member of the L.N.U. in 1920 and attended many meetings with her family. In the 60's watching the family was a delight, George, a classics scholar who had invariably attended a Diocesan meeting in the morning, had to be prodded by his sisters in turn to remain awake. The prodding was done with a Book of Common prayer!

Miss Joan Gibbons - author of 'The Flora of Lincolnshire'

Photo I Weston

Miss Gibbons collected large quantities of herbs during the war, including belladonna - 3 car loads, some from Louth. This was dried out by Miss R. Nickerson in school. These collections including rosehips and other herbs, produced some of the money for funding the publication of the future Flora of Lincolnshire.

Miss Gibbons was the Lincolnshire Secretary for the Wild Flower Society, taking over from Miss D. Marsden of Louth who had been compiling a county checklist. Miss Gibbons was also the BSBI recorder for the two Lincolnshire vice counties and led several BSBI/ L.N.U. meetings. In 1951 a visit to North Lincolnshire produced *Arnoseris minima, Teesdalia nudicaulis, Rhinanthus major* and *Apera spica-venti* near Epworth Turbary; *Hypochaeris glabra, Carex curta* and a large patch of *Gentiana pneumonanthe* from Manton Common and *Allium scorodoprasum* from Bracken Hill on Ermine Street. From 1954-1959 she recorded for the first 'Atlas of the British Flora' (Perring and Walters 1962). This was based on 10km. squares. As the Co-ordinator, Dr F. Perring states "Dressed for botany, with her felt hat firmly on her head, Joan Gibbons worked the vast Lincolnshire Counties as well, if not better, than any in the Kingdom". She was also able to point out habitat areas the newly formed Lincolnshire Trust for Nature Conservation were looking for and was a member of its Council for many years.

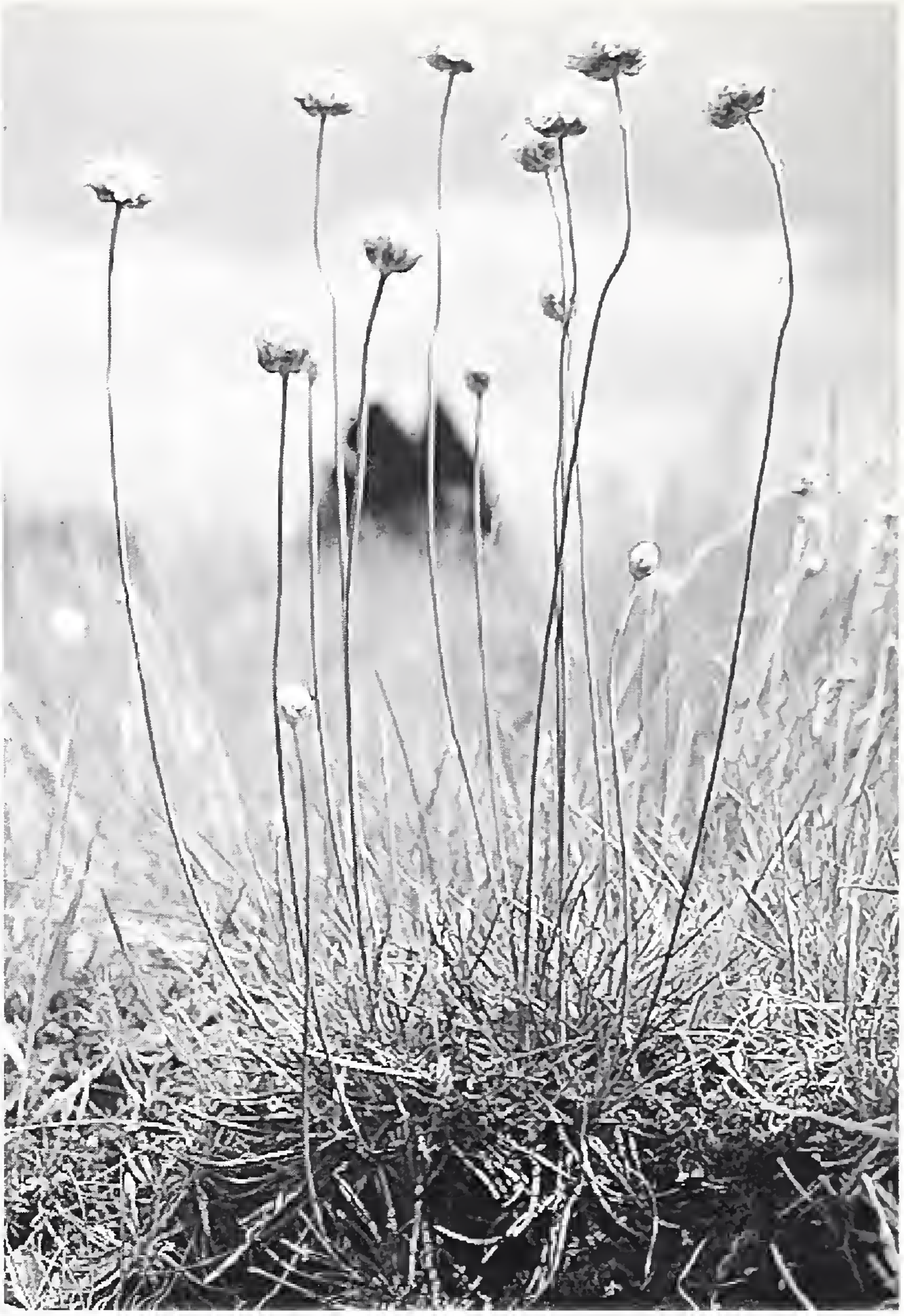
Sand leek *Allium scorodoprasum* has been known from Ermine Street for many years. photo I Weston

Miss Gibbons was helped by LNU President John Chandler, who recorded in the south, particularly with roses and brambles and by her two great friends, the Nottinghamshire recorders, Brenda and Leaver Howitt. Also by many L.N.U. friends - Noela Read and Eva Dunn corresponded over the whole period. The Atlas was published in 1962. The 10km. square project was without doubt a triumph of recording. The 90 10km. squares are shown in the Flora, as indeed are the eighteen divisions and two vice-counties.

Ray and I came to Riseholme in 1960 and promptly joined the L.N.U. and the Trust. We were immediately welcomed by Mr Tom Baker secretary and past president and introduced to Miss Gibbons, Miss Noela Read and Nurse Heath. This led to meeting Mrs Olive Spurrier and Mrs Zoë Porter. I was conscripted into botanical recording and the start of long time friendships.

The work for the Atlas delayed the publication of the county flora but there is no doubt that the period of intense square bashing added enormously to its value. New species were added to the county list including *Poa bulbosa* (1958 Cleethorpes) by Mrs Betty Watkinson, who helped greatly with the Flora; *Parapholis incurva* (1957 Gibraltar Point) and later *Lamiastrum galeobdolon* subspecies *galeobdolon* (1969 Burwell and Welton) by Mrs Mary Smith, the latter species new to Britain.

Miss Gibbons investigated a species of thrift found at Ancaster. She writes "In 1953 my attention was drawn to a species of thrift growing at Ancaster, not looking like *Armeria maritima* but a bigger plant in pasture. It was suggested that I should send it to Dr H.G. Baker of Leeds University who was much interested and said it reminded him of a continental thrift. Since then he has visited it and also Mr J.E. Lousley has been much interested in it. It was recorded by Rev. Woodruffe-Peacock in 1895 at Manthorpe and also by various botanists since 1726 but no-one recorded it as a new British plant until now". Her paper on the Ancaster Thrift *Armeria maritima* ssp. *elongata* with J.E. Lousley (Gibbons & Lousley, 1958) was published with great detail.



The Ancaster thrift *Armeria maritima* ssp *elongata*. A national RDB species from Lincs. photo GS Phillips

The Flora

At the launch of 'The Flora of Lincolnshire' by Miss E. Joan Gibbons in 1975 at Riseholme, Dr. Franklyn Perring said "The Atlas delayed the publication of her finest work, The Flora, until now - the first full county flora for any county in England to be written by a woman." The Flora is an historical one, highly necessary for a first Flora, but it was intended to be used in conjunction with the Atlas into which Miss Gibbons put so much effort. She was one of the most respected of the voluntary BSBI county recorders. As her successor I have now her field diaries from 1946 - 81 as well as other documents. The 1948 diary was lost for two years and returned eventually to her by a farmer from a ploughed field. It is difficult to interpret. We are trying to sort out all her records ready for computer inputting. I am particularly indebted to her for introducing me to the delights of the Lincolnshire flowers and for a deep friendship which lasted until her death. She was honoured by the L.N.U. in becoming President for a second time. The Flora incorporated many features and it was the culmination of the Union's recording brief laid down at its formation.

Miss Gibbons recorded in Lincolnshire for many more years and the 'Supplement to the Flora' (Gibbons and Weston) was published in 1985. This included many good records and some refinds for the county. Mrs V. Wilkin recorded *Pilularia globulifera* for Messingham and *Equisetum sylvaticum* from the ironstone spoil heaps at Crosby Warren - both thought to have become extinct - though now found at other sites. A second supplement was underway - an atlas for Lincolnshire intended for 1990.

Mr Marston Peet made a vast contribution to the efficiency of plant recording in Lincolnshire. photo I Weston

In 1980 Mr W. Marston Peet joined us and made a vast contribution to the recording system. New mastercards were made detailing pre and post 1980 records for each square and kept meticulously up to date. Squares were "allocated" to members of my botany class and Mr Peet did a survey of all the Trust Reserves during 1985.

Roadside verge records from the Trust and SSSI records were added to the lists and these mastercards are still being used. The post 1987 records are being recorded in an additional column with field card backups. The 1998 table shows the total number of taxa recorded for each square.

The BSBI Atlas was a milestone in the study of the Flora of Great Britain and Ireland. It was essentially a mapping project, but one with considerable conservation value. New types of recording systems were necessary and planned by BSBI, Nature Conservancy Council and the County Trusts.

Dr George Peterken made many visits to Lincolnshire in the 1960's and from 1978 onwards organised surveys of the Central Lincolnshire woodlands, with particular interest in the small-leaved lime woods of the Wragby - Bardney area. The woods were extensively worked and *Pyrola minor* was re-recorded in the Rasen area at Willingham. This pioneer work led to the establishment of the Bardney Limewoods National Nature Reserve which was declared by Forest Enterprise and English Nature on July 25, 1997.

Up until 1975 there was little protection for Wild Plants in Great Britain, but with the 1975 and 1981

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	20		**457**	**497**	**594**	**516**					
SE	10	**566**	**649**	**706**	**664**	**593**	**488**				TA
	00	**592**	**681**	**788**	**632**	**615**	**553**	**600**	**248**		
	90	**549**	**698**	**527**	**628**	**626**	**488**	**556**	**576**		
	80		**586**	**559**	**534**	**570**	**540**	**586**	**549**	**380**	
	70		**665**	**785**	**662**	**672**	**562**	**546**	**601**	**445**	
	60		**585**	**787**	**653**	**617**	**743**	**580**	**611**	**525**	
SK	50		**461**	**528**	**514**	**553**	**611**	**430**	**450**	**569**	TF
	40		**452**	**641**	**683**	**520**	**391**	**475**	**307**		
	30		**552**	**683**	**551**	**460**	**440**	**465**	**329**		
	20		**525**	**666**	**674**	**453**	**583**	**353**	**405**	**253**	
	10			**541**	**715**	**633**	**425**	**314**	**443**		
	00				**728**	**598**	**373**	**321**			

Total number of species recorded per hectad by 1st June 1998 - complied by WM Peet

Wildlife Bills 62 species of vascular plants had legal protection. The Royal Society for Nature Conservation published two "Red Data Books for the Protection of Vascular Plants" (Perring & Farrell; 1977, 1983), listing rare and threatened species. Many Lincolnshire species were included and these are shown on lists 1 and 2. Some of these are extinct in the county. The NCC also organised both national and regional surveys of rare plants. Mrs Gigi Crompton visited Lincolnshire from 1981 - 1984 and South Humberside in 1985 to survey rare plants for the Eastern England Project. Some of the nationally rare plants plus extra regional rarities were included in her brief, see list 3.

LIST 1 National Red Data Book Species (1st and 2nd edition) found in Lincolnshire. These occur in 15 or less 10km. squares in Britain IUCN = International Union for Conservation of Natural Resources meaning Threatened or Endangered Plants in Europe. † = Extinct in Lincolnshire with date of last record.

Equisetum ramosissimum
Pilularia globulifera **IUCN**
†*Viola persicifolia* 1936
Agrostemma githago
Herniaria glabra
†*Atriplex pedunculata* 1936
Althaea hirsuta
Petroselinum segetum **IUCN**
†*Selinum carvifolia* 1931
†*Limonium bellidifolium*
1966*Armeria maritima* ssp. *elongata*
Gentianella anglica **IUCN**
Rhinanthus angustifolius
Orobanche purpurea (plt 8)
†*Stachys germanica* 1840
†*Galeopsis segetum* 1899
†*Teucrium scordium* 1953
†*Senecio palustris* 1820
†*Arnoseris minima* 1958
†*Hypochaeris maculata* 1956
Alisma gramineum
†*Damasonium alisma* 1923
Maianthemum bifolium
†*Iris spuria* 1982 (plate 9)
Epipactis dunensis
Himantoglossum hircinum
Festuca longifolia

LIST 2 Taxa considered for inclusion in the red data books but omitted as they are now known to be present in more than 15 10km squares in Britain

Characteristic leaves and flowers of May lily photo I Weston
Maianthemum bifolium a national Red Data Book species.

†*Alopecurus bulbosus* 1949
Callitriche truncata
†*Corynephorus canescens* 1878
Elodea nuttallii
Festuca arenaria
Lathyrus palustris
Linum perenne
Marrubium vulgare
Vulpia unilateralis
Oenanthe silaifolia
†*Polypogon monspeliensis* 1992
Ruppia cirrhosa
†*Sonchus palustris* 1942
Stratiotes aloides
Tilia platyphyllos
Vicia lutea

LIST 3 Extra species included in the East England Rare Plants Project. Lincolnshire 1981 - 1984, South Humberside 1985.

Pulsatilla vulgaris
†*Potentilla neumanniana* 1982
Thesium humifusum
Orchis ustulata
Epipactis purpurata
Spiranthes spiralis
Blysmus rufus
Eleocharis quinqueflora
Carex ericetorum
Allium scorodoprasum

Many other plants not included in the National Red Data lists have become extinct in Lincolnshire and these are listed in Miss Gibbons' Flora.

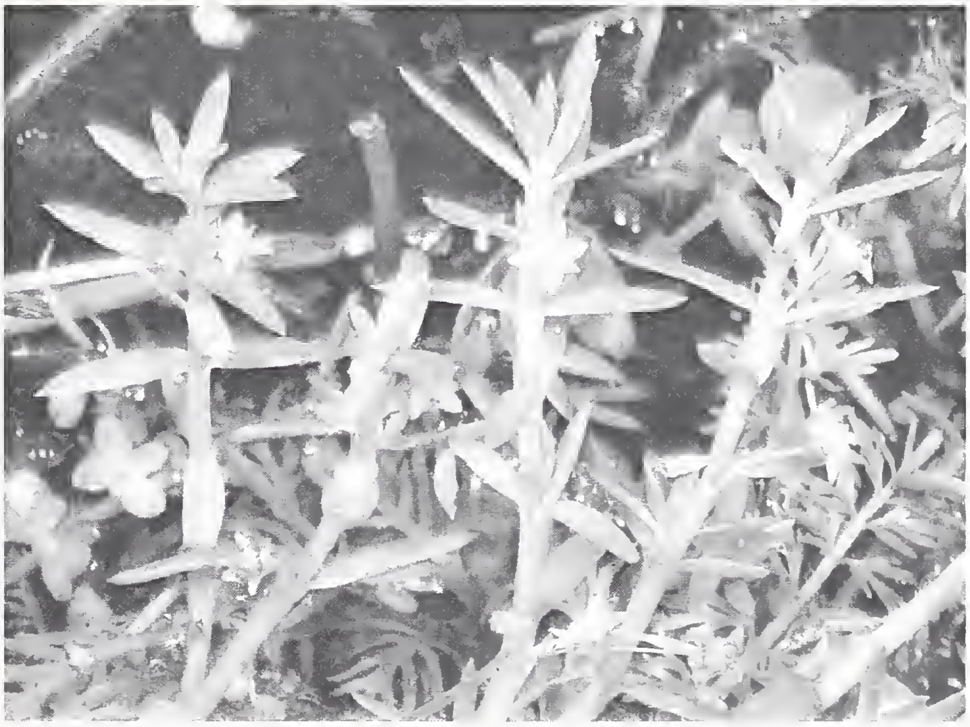
A survey of pillwort *Pilularia globulifera* (rare over Europe) was carried out in 1984 by the British Pteridological Society and International Association of Pteridologists. Mr Clive Jermy came to Lincolnshire in 1985 and 1987 to see our sites at Messingham N.R., Sandtoft and Lincoln.

BSBI Monitoring Scheme 1987 - 1988 (Rich & Woodruffe, 1990)
This was based on recording one in three of the 10km squares in Britain and Ireland. A total list from the square and three extra lists from tetrads A, J and W in each (known thereafter as jaws) were to be verified by the county recorders and passed to the Biological Records Centre at Monks Wood. The 12 Lincolnshire hectads were well recorded. Mr W.M. Peet became known as "Computer Pete" sending in one of the longest lists from TF47 with Mrs V. Pennell a close runner-up in TF14. Special field cards with regional lists were issued requiring habitat descriptions, time on site and details of rare species. This was intended as a pilot survey for a new British Atlas. After much discussion the date lines for Atlas 2000 were fixed, to include these records in the last date class.

In 1988 the Lincolnshire Trust published "Endangered Wildlife in Lincolnshire and South Humberside" - A Red Data Report edited by A.E. Smith. This was a county first of its kind. A working party representing most groups was formed in 1985 and lists were made of the rare and vulnerable species. All the National Red Data species and threatened and vulnerable local species were included. The plant section was illustrated with exquisite line drawings by Mrs Mary Smith.

A second Red Data Report was published in 1996 (Smith 1996), showing changes from the first edition and including summaries of the conservation work done by the Trust. The Trust's publication in 2000 “Lincolnshire Biodiversity Action Plan” outlines its programmes for future surveys, monitoring and management of the rarer species.

Other recording schemes from the BSBI in which we have taken part include the National Mistletoe Survey (Vines & Briggs, 1999), The National Black poplar Survey, the *Cochlearia danica* survey and the survey of the alien New Zealand Pigmy-weed *Crassula helmsii*, first seen in Britain in 1950 (Dawson & Warman 1987). All have described in the L.N.U. Transactions.



New Zealand pygmyweed *Crassula helmsii* the photo RS Key spread of this invasive alien indicates the danger of introducing species from afar.

A major survey in 1994 on ‘Scarce Plants in Britain’ (Stewart et al. 1994) records plants present only in 16 - 100 10km. squares in Britain. Not rare enough to qualify for the National Red Data Book, these species have good potential as indicators of change. The publication does more than map the species. There are descriptions of each species and also details of introductions. This was a very time consuming but rewarding survey and Mr Peet spent hours interpreting the data we got back for checking and correcting.

The third Red Data Book edited by Mr Wiggington of the Joint Nature Conservation Committee was published in 1999. This is quite different from the first two as it deals with endemic taxa and those plants of a wider geographical area. The Lincolnshire entries include *Armeria maritima* ssp. *elongata, Dianthus armeria, Festuca longifiolia, Maianthemum bifolium, Orobanche purpurea, Rhinanthus angustifolius, Herniaria glabra* and *Limonium binervosum* ssp. *anglicum.* All except the *Dianthus* were recorded in 2000.

The new British Society - Plant Life - initiated a "Back from the Brink Project" (Davies and Duckworth 2000) involving surveys and searches for rare plants. *Pilularia, Gentianella anglica, Dianthus armeria* and *Althaea hirsuta* were researched using some of our data.

The British Atlas 2000 project 1996 - 1999, based at Monk's Wood was the BSBI Millennium Project. It is due for publication in March 2002. Many L.N.U., BSBI and Trust members were involved and acknowledged, in particularly Miss Z. Harris, Mrs V. Wilkin and Mr P. Kirby who gave so much help with all the clerical work as well as a marathon field programme. Based once more on 10km squares, there are three date classes - pre 1970, 1970 - 1986 and 1987-1999 and there are maps for many aliens not worked for the first Atlas. During the surveys two of our rarest plants, the Ancaster thrift and the glabrous rupturewort were each recorded in a new square.

Since the "Supplement to the Flora", new species have been added to the county list and some species thought lost have been refound: *Oenanthe silaifolia* - Lea, *Callitriche hermaphroditica* - Whisby N.R., *Calystegia x howittiorum* (cover)- Riseholme, Scampton, Upton and Langton, *Alopecurus x plettkei* - Winteringham, *Pyrola rotundifolia* - Messingham N.R., *Epipactis phyllanthes* - Hartsholme, *Rubia tinctoria* - Boothby Graffoe, *Myosurus minimus* - Lea, *Hydrocharis morsus-ranae* - Burton Pits N.R. and *Orobanche purpurea* - South Killingholme (plate 8).

For the future - recording to fill in the gaps in the Atlas will be a priority. Hopefully we shall be able to find a home for the LNU Herbarium and library, complete the computerisation of the Botanical records and have a Biological Records Centre in the county.

Mouse tail *Myosurus minimus* photo I Weston
thought extinct since 1894, rediscovered in 1989.

Mrs. Irene Weston (B.Sc. Hons., Bot. Grad. Cert. Ed.), one of very few people honoured by being elected twice as LNU President in 1968 and 2000. She graduated at University College of Wales Aberystwyth, did a year in the cytology dept. of the Welsh Plant Breeding Station followed by 3 years teaching in the Dept. of Botany, University College of S. Wales, Cardiff. She married Ray in 1954 and taught botany at the Lancashire College of Agriculture and, after moving to Lincolnshire in 1960, at the Lincolnshire College and University of Nottingham Extra Mural Department until 1990. She is Sectional Officer in the LNU and recorder for VCs 53 and 54 for the Botanical Society of the British Isles since 1980. She has served on the BSBI and Lincs Trust Councils and contributed to the Trust's publication on Endangered Species. She is involved in many projects in countryside affairs and is 'addicted to flower hunting and photography'.

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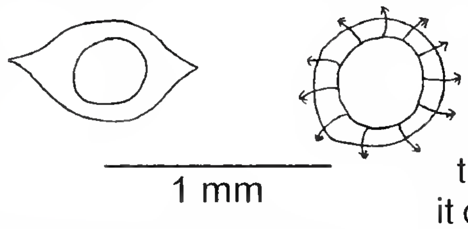
THE CONTINUED OCCURRENCE OF THE MOSS ANIMAL *LOPHOPUS CRYSTALLINUS* NEAR BARTON UPON HUMBER

John Bratton

Lophopus crystallinus is a freshwater bryozoan or moss animal, one of ten such species recorded in Britain (Mundy 1980). It forms small colonies on various firm surfaces in clean cold water, where it feeds by ciliated tentacles collecting suspended particles from the water. When the colony is disturbed, the tentacles are withdrawn into a jelly-like body, at which stage it can resemble a pond snail's egg mass. The mature animal could also be confused with another much commoner bryozoan, *Cristatella mucedo*. However, the resting eggs (statoblasts) of these species are very distinctive.



Statoblasts of *Lophopus crystallinus* (left) and *Cristatella mucedo* (right).

Lophopus has been found in about a dozen places in the southern half of England. It was once abundant in the Norfolk Broads: Hurrell (1911) described how "a single haul would have filled a pail". It has not been found in the Broads since the Second World War and is now rarely seen in Britain. Because of its decline, it has been selected as a Priority Species in the UK's Biodiversity Action Plan (UK Biodiversity Group 1999). This document includes a distribution map for *Lophopus*, to which can be added a Welsh record which has recently come to light: from Leckwith Common near Cardiff in 1891 (James 1891). From the Action Plan map it can be seen that *Lophopus* has been reported from only four places since 1970: Bagmore Pit in the Norfolk Breck (1970s), Chil Brook, Eynsham, Oxfordshire (1977), a fishery pond at Westhoughton, Lancs (*c.* 1992), and Barton Blow Wells near Barton upon Humber, N. Lincs, TA011228. At this last site it was first found in 1982 (Bratton 1983) and has been refound several times since.

Barton Blow Wells comprises several springs fed by groundwater in the chalk at the north end of the Lincolnshire Wolds. There is one main pool in which water can be seen welling up through loose sand, and several smaller pools in which seepage from the groundwater is not obvious and these may derive their water more from lateral flow from the main pool. There are also two circular brick and concrete wells, about 1 metre diameter filled with loose stones to about 0.5 metres from their rim. Water wells up in these and overflows into the main pool. All lie within a patch of mature sycamore and willow woodland through

Lophopus crystallinus - reproduced from Allman (1856), with permission from the Ray Society which little direct sunlight penetrates in summer. Fallen branches and leaf litter are abundant in the pools and it is on these that *Lophopus* is usually found. Aquatic mosses and starwort (*Callitriche* sp.) also occur in the main pool. When flow is strong, the water temperature of this pool is close to 10 C regardless of time of year, indicating the source of water lies deep within the chalk where there is a constant temperature. All records of *Lophopus* are from the main pool.

As *Lophopus* is now a UK conservation priority, the purpose of this note is to place on record its occurrences and absences at Barton between 1982 and 1999 (appendix). Visits to the Blow Wells have been irregular. All my visits are listed below, including those when no *Lophopus* was found.

The population of *Lophopus* at Barton Blow Wells is clearly persistent, in contrast to some of its other recorded sites where it was found for a short time only (e.g. Chil Brook, R. Manuel pers. comm. 1988). At Barton it survived the dry years of 1988/91 and 1995/97, probably as dormant statoblasts during the most stagnant periods. It is not known how long dormant *Lophopus* statoblasts can remain viable, so the maximum survivable period of no flow is also unknown. It is to be hoped that excavations begun in 2000 in the pasture adjacent to the Blow Wells, for the purpose of creating bittern habitat and supplying clay for use by North Lincolnshire Council, do not have an adverse effect on the hydrology of the Blow Wells. If they were to create an additional outlet for groundwater close to the existing wells, any future periods of no flow in the Blow Wells could be artificially lengthened. Fortunately, English Nature and the Lincolnshire Trust are confident that the Blow Wells will not suffer as a result of this work. At the moment (March 2001) groundwater levels in the northern Lincolnshire chalk are around or above their historic maximum levels due to the extraordinarily high rainfall of this autumn and winter (M. Hutchinson, Environment Agency, pers. comm.).

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Appendix - Records of *Lophopus crystallinus* at Barton Blow Wells.

Lc = *Lophopus crystallinus*. T = water temperature. Cond. = conductivity in microS/cm corrected to 25 C. Changes in water level are described relative to a 'tideline' on trunks of trees growing in the main pool.

29 Dec 1982	Lc abundant. Strong flow.
9 Apr 1983	Lc not found.
4 Jul 1983	Lc not found. T = 10 C. Cond. = 980.
18 Aug 1983	Lc present, incl. statoblasts. T = 11 C.
23 Oct 1983	Lc present on fallen branches. T = 9.5 C. Flow slight.
17 Dec 1983	Lc abundant.
27 Dec 1983	Lc present, no statoblasts in three colonies collected.
18 Feb 1984	Lc present.

21 Apr 1984	Lc present, one colony found.
23 Jun 1984	Lc not found in very brief search. T = 11 C. Cond. = 747. Flow very slight.
14 Jul 1984	Lc not abundant but four colonies found. T = 12.5 C. Cond. = 830. Flow very slight.
27 Dec 1984	Lc not found. T = 7 C. Cond. = 830. Flow slight or absent.
31 Mar 1986	Lc not found.
26 Mar 1989	Lc not found. No flow. Water level in pool down by about 1 metre.
13 Jul 1991	Lc present but not abundant. Two colonies found on a stick. No noticeable flow. Water level down about 0.7 metres.
29 Mar 1997	Lc not found. Searched all dead wood within reach and a few dead leaves. No visible flow. Water level down by about 0.7 metres, with rabbit burrows in soil that would normally be below water level.
27 Dec 1997	Lc not found. No flow. Water level down by at least 1 metre. Spent 20 minutes searching submerged branches and leaves.
10 May 98	Lc not found. Water levels very high and flow strong. Main pool covered about an acre.
28 Dec 1998	Lc present. About 25 colonies on fallen branches and a willow trunk. Strong flow.
13 Jun 1999	Lc present on twigs. Not a prolonged search. Strong flow.

Postscript

On 5 August 2001, a 20 minute search found two *Lophopus* colonies on a detached barkless branch of about 4 cm diameter. There was a moderately strong flow of water from the main pool though the water level was down by about 30 cm.

THE WASPS AND BEES (HYMENOPTERA: ACULEATA) OF KIRKBY MOOR IN WATSONIAN LINCOLNSHIRE

Michael E. Archer

Kirkby Moor (plate 9) is a very good site for aculeate wasps and bees with 84 recorded species including three of national importance. The aims of this paper are to describe the wasp and bee fauna of Kirkby Moor, compare this fauna with other Lincolnshire sites and to use non-parametric statistical procedures to estimate potential species diversity.

Kirkby Moor (TF2262) is situated about 1.5km west of Kirkby-on-Bain and about 7.5km south of Horncastle in Lincolnshire. It is a nature reserve of the Lincolnshire Trust for Nature Conservation which manages its wildlife. The 75ha reserve is a remnant of the once extensive heathlands on the sands and gravels of the Woodhall district in the North Lincolnshire Coversands and Clay Vale Natural Area.

The open parts of Kirkby Moor are dominated by heather, bracken and wavy hair grass with moss and lichen communities. Areas of bare sand, associated with pathways and other disturbed areas, are used as nesting sites for the subterranean species. At the southern end of the reserve is oak, birch and pine woodland as well as developing birch, hawthorn and sallow shrubs. The open areas of the woodland and the shrubs provide nectar, pollen and prey resources, besides sunning and mating places, for the aculeate wasps and bees. The walls of the buildings associated with Foxhill Cottage are used as sunning sites and nesting sites for some aerial nesting species.

Sampling methods

Between 1989 and 1999, 14 visits were made to the Moor distributed throughout the year as follows: April (1 visit), May (3), June (3), July (3), August (3) and September (1). All visits occurred during warm sunny weather. During each, approximately three hour, visit all species of aculeate wasps and bees were recorded and usually collected with a hand net for identification. In the following account, the nomenclature follows that of Kloet and Hincks (1978).

Species present and seasonal progression of species

A full list of the species is given in the Appendix. At the family level, Table 1 shows the taxonomic distributions of species and records. A record represents a specimen differing in one of the following three variables: name, sex and day of visit. The solitary wasp family, Sphecidae, and the solitary bee families, Andrenidae, Halictidae and Anthophoridae, are dominant in terms of number of species and records, although the Pompilidae are well represented in terms of the number of records.

Table 1 The number of species and records of aculeate wasps and bees recorded from Kirkby Moor.

Solitary wasps	No. species	Records
Chrysididae	5	10
Sapygidae	1	1
Pompilidae	8	18
Eumenidae	4	8
Sphecidae	18	51
Total solitary wasps	36	88
Solitary bees		
Colletidae	3	8
Andrenidae	11	30
Halictidae	10	24
Megachilidae	3	5
Anthophoridae	9	15
Total solitary bees	36	82
Total solitary wasps & bees	72	170
Social species		
Vespidae	3	
Apidae	9	
Total social species	12	
Total wasp & bee species	84	

June and July were the best months for recording species of solitary wasps, with May, June and July being +/- equally productive for the first recording of species (Table 2).

Table 2 The number of species and first records of species of solitary wasps and bees recorded per month at Kirkby Moor.

	April	May	June	July	August	September
Solitary wasps						
First records		10	12	12	2	
Recorded		10	18	22	8	1
Solitary bees						
First records	4	13	5	8	6	
Recorded	4	17	9	11	9	4

The species most evident were the pompilid *Priocnemis schioedtei*, the sphecids

Ammophila sabulosa and *Mellinus arvensis* and the mason wasp, *Ancistrocerus oviventris*. These species are subterranean nesters except for *A. oviventris* which built its mud nests, particularly on the brick walls of the ponds. The burrows of *M. arvensis* are particularly associated with rabbit holes.

May was the most productive month for both the number of species and first recording of solitary bees (Table 2). The species most evident in the spring were *Andrena scotica* with its cleptoparasites *Nomada marshamella* and *N. flava*, and *A. barbilabris* with its cleptoparasite *Sphecodes pellucidus*. These *Andrena* bees were often found on the flowers of the hawthorn. The species most evident in the summer, particularly while foraging from heather flowers, were *Colletes succinctus* with its cleptoparasite *Epeolus cruciger* and *Andrena fuscipes* with its cleptoparasite *Nomada rufipes*. The sweat bee, *Lasioglossum calceatum* with its probable cleptoparasite *Sphecodes monilicornis*, although only found during the summer, is also usually found in the spring. All the above host bees are subterranean nesters.

Species-area relationship

A problem in the study of any site is the difficulty of knowing when the species list is sufficiently complete so that comparisons with other sites may reasonably be made. One way to resolve this problem is the use of the species-area relationship where the number of species and the area of the sites, both expressed as natural logarithms (ln), can show a positive linear relationship (Usher, 1986). If the number of species in relation to the area of a site falls within the range of other sites which show a statistically significant species-area relationship, then the site may reasonable be compared with other sites. The dot for Kirkby Moor falls within the range of 19 sites from the north and north midlands of England (Archer, 1999). Thus the species list from Kirkby Moor is reasonably complete to compare with other Lincolnshire sites.

Species quality

Three species of national importance have been recorded from the Moor: one Red Data Book species (Shirt, 1987), *Nomada fulvicornis*; one national notable or scarce species (Falk, 1991), *Priocnemis schioedtei*; and *Tachysphex nitidus* as established by recent work of the Bees, Wasps and Ants Recording Society (BWARS) (Edwards, 1998). *N. fulvicornis* and *T. nitidus* are on the northern edge of their range in Lincolnshire while *P. schioedtei* is distributed throughout England, Wales and Scotland.

To take account of all species and the latest information from BWARS, Archer & Burn (1995) introduced a new national quality scoring system and Archer (1999) gave definitions for the six national statuses. High quality species have a scarce, rare or very rare status while low quality species have a universal, widespread or restricted status. By giving each of 72 species of solitary wasps and bees a national status a national quality score of 136 can be calculated (Table 3) with a national species quality score of 1.9 (136/72).

Table 3 The Archer national quality scores of the species of solitary wasps and bees recorded from Kirkby Moor (Species quality score = 136/72 = 1.89)

Status	Status value (A)	No. species (B)	Quality score (A x B)
Universal	1	50	50
Widespread	2	19	38
Restricted	4	0	0
Scarce	8	2	16
Rare	16	0	0
Very rare	32	1	32
Total		72	136

How do these scores relate to those of other Lincolnshire sites? Table 4 summarises the quality characteristics of Risby Warren (Archer, 1994), Gibraltar Point NNR (Archer, 1998) and Saltfleetby-Theddlethorpe NNR (Archer, 2000). Although the quality scores, and the number of solitary and high quality species will be influenced by the areas of the sites, the species quality scores are relatively independent of site area (Archer, 1999), so can be used to compare sites. The species quality scores of the four sites are similar so that Kirkby Moor can be considered as important as the others. Since two of the sites have NNR status, the aculeate data would qualify the other two sites for NNR status.

Table 4 Species quality characteristics of solitary wasps & bees from Lincs sites.

	No. solitary species	Total high quality spp.	Quality score	Species quality score	Area (ha.)
Gibraltar Point	86	4	140	1.7	437
Risby Warren	63	3	114	1.8	170
Saltfleetby-Theddlethorpe	63	4	114	1.8	313
Kirkby Moor	72	3	136	1.9	75

Estimating the potential number of solitary wasp and bee species

Another problem in the study of any site is the difficulty of knowing how many more species are present yet unrecorded. Recent advances in non-parametric statistical procedures offer a way of addressing this problem. The presence/absence quantitative estimate of Chao (in Colwell & Coddington, 1994) is based on the number of species that are observed in one (unique species) or two (two occasion species) samples or visits. The jackknife procedure (Heltshe & Forrester, 1983) only depends on the unique species. Because some aculeate species are only active in the spring or summer it is advisable that samples be taken throughout the months of adult activity. The software to carry out the statistical procedures was provided by Pisces Conservation Ltd.

The statistical procedures were run 14 times for the species of solitary wasps and bees. The software takes 1, 2, etc. samples at random 14 times, each time calculating a mean estimate of potential species diversity. With a small number of samples the Chao estimates are erratic, but as more samples are selected the estimates may stabilise giving confidence in the estimates. With an increasing number of samples the jackknife estimates may approach an upper asymptote. The Chao estimates do stabilise and the jackknife estimates approach an upper asymptote (Fig. 1, 2). The final Chao and jackknife estimates are within about 1% of each other so giving additional confidence in the

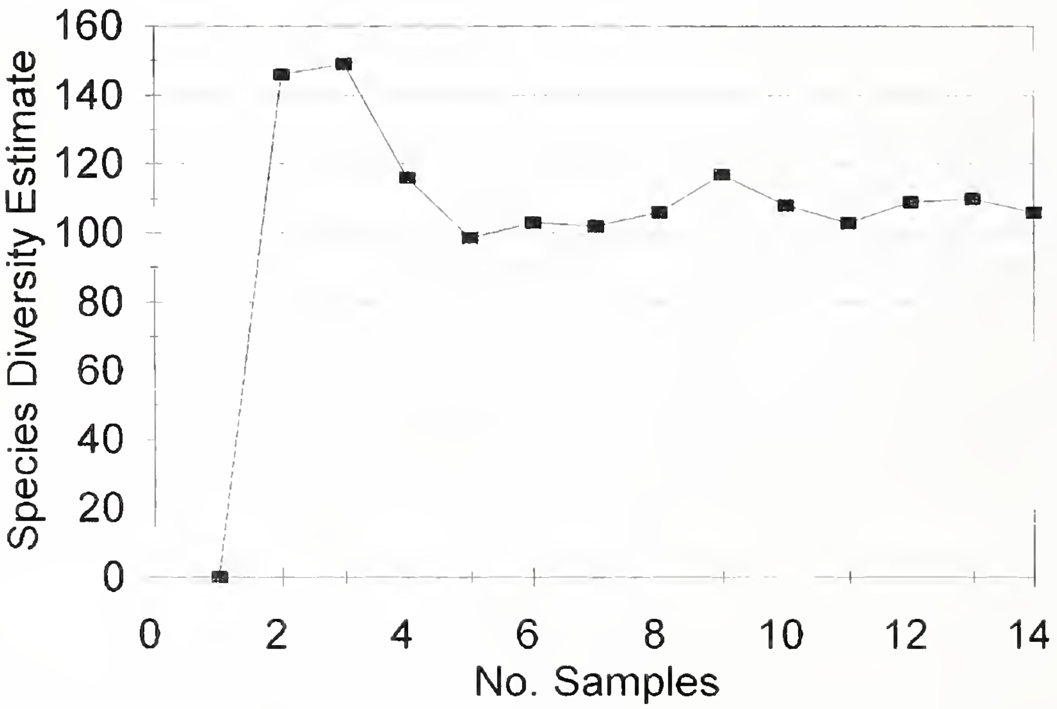


Figure 1 The Chao presence/absence estimate of species richness for Kirkby Moor

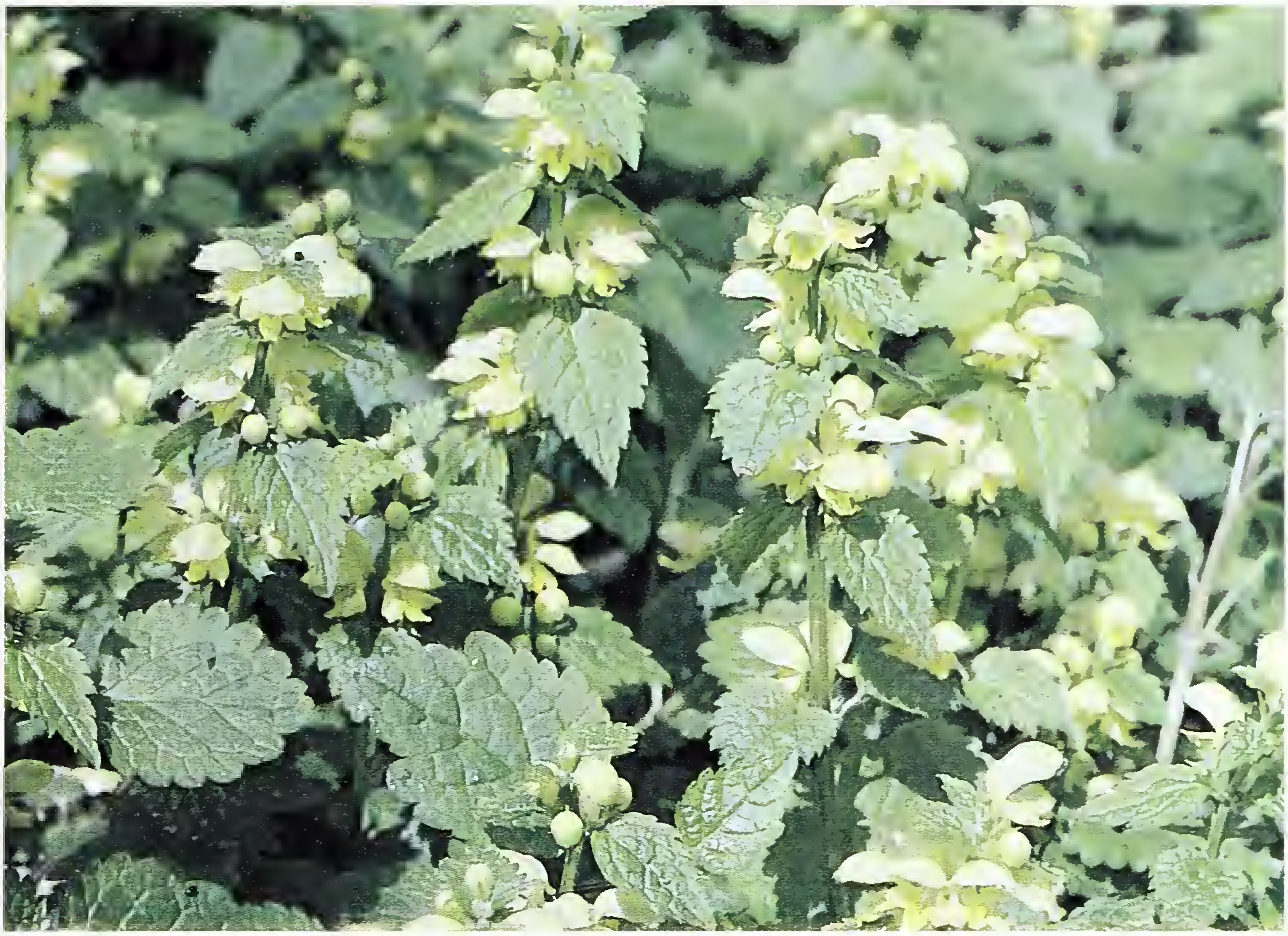


Plate 1 Yellow archangel *Lamiastrum galeobdolon* ssp *galeobdolon* photo Irene Weston
the type subspecies unique in Britain to Lincolnshire's woodlands (page 70).

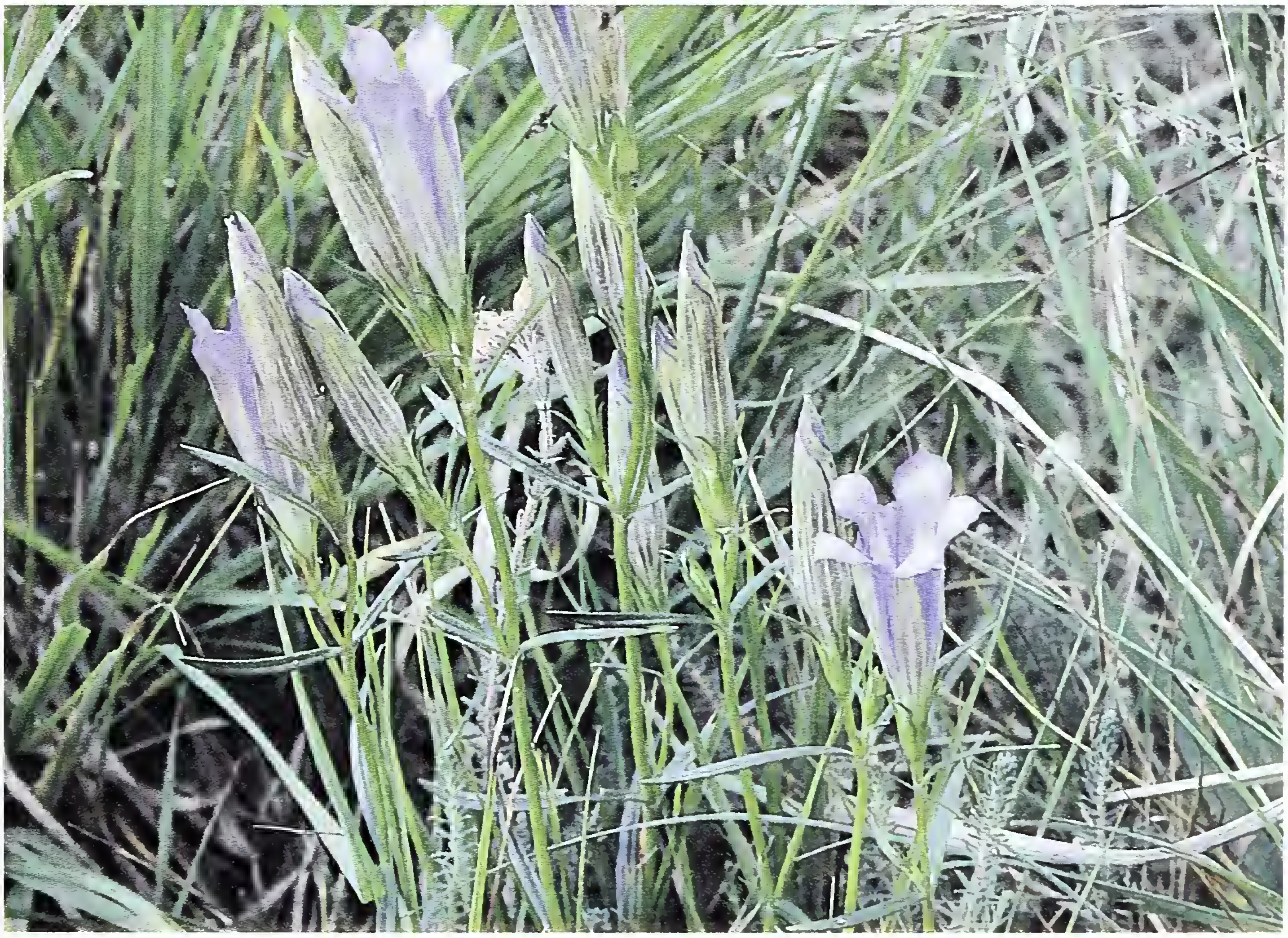


Plate 2 Marsh gentian *Gentiana pneumanthe* (page 74) Scotton photo Irene Weston
Common NR, a plant of our wet heathlands on the Coversands.

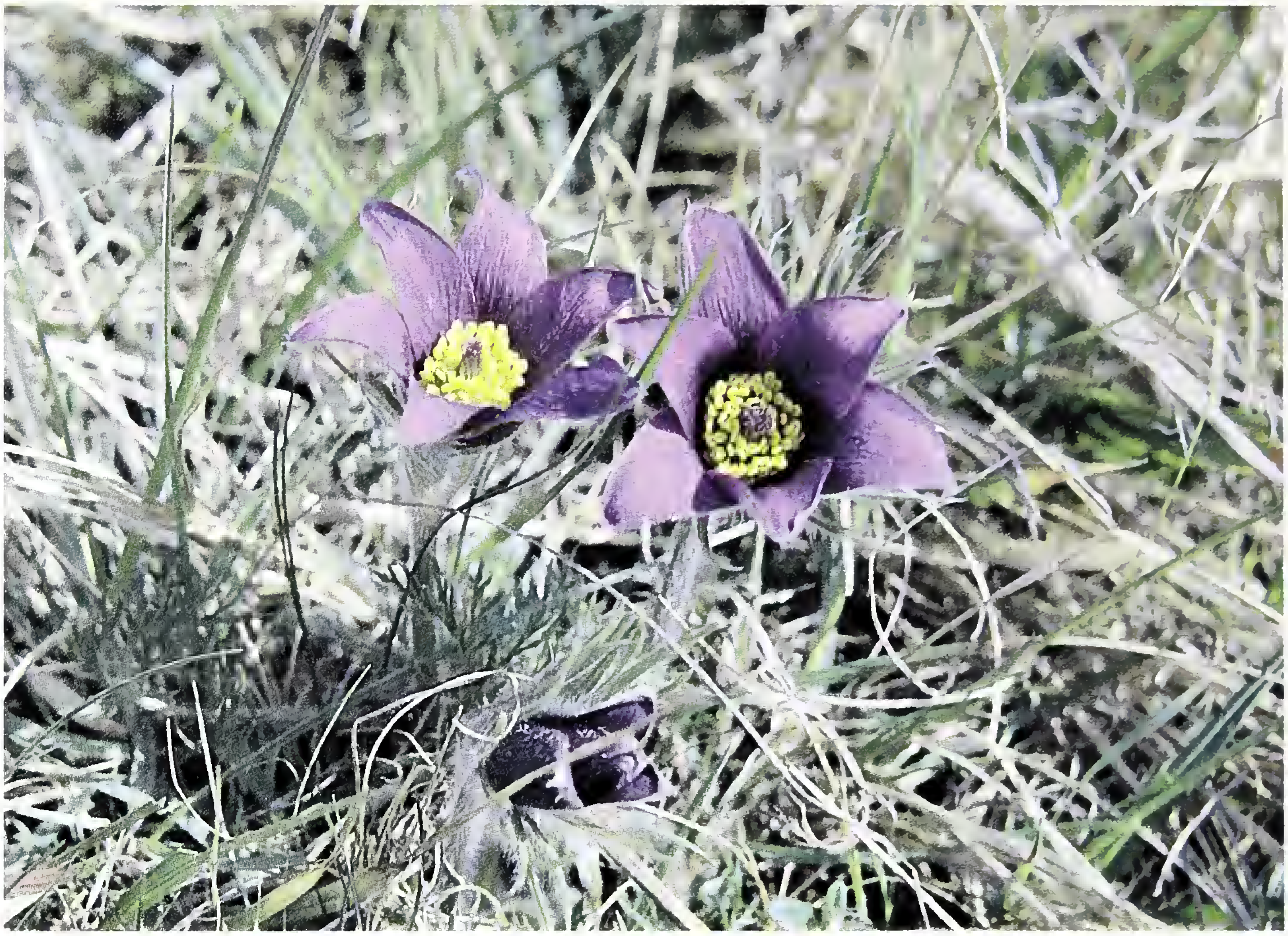


Plate 3 Pasque Flower *Pulsatilla vulgaris* (page 71) at Honington a plant of the best calcareous grasslands. photo Irene Weston

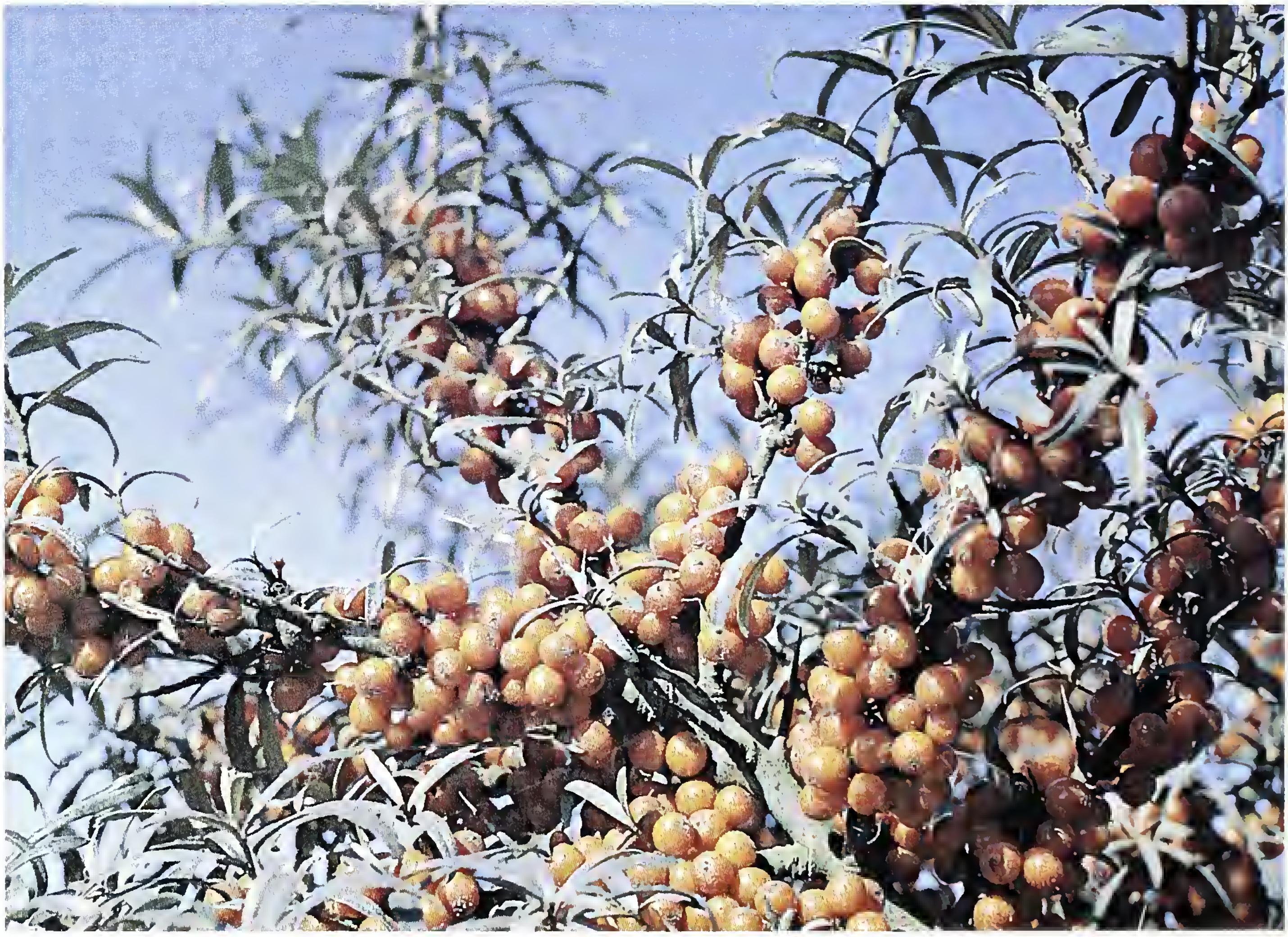


Plate 4 Berries of sea buckthorn *Hippophae rhamnoides*, native only in Eastern England is sometimes an invasive species on dunes (page 72). photo Irene Weston

Plate 5 Marsh orchid *Dactylorhiza praetermissa* at Saltfleetby-Theddlethorpe dunes (page 72) - a superb show of colour. photo Irene Weston

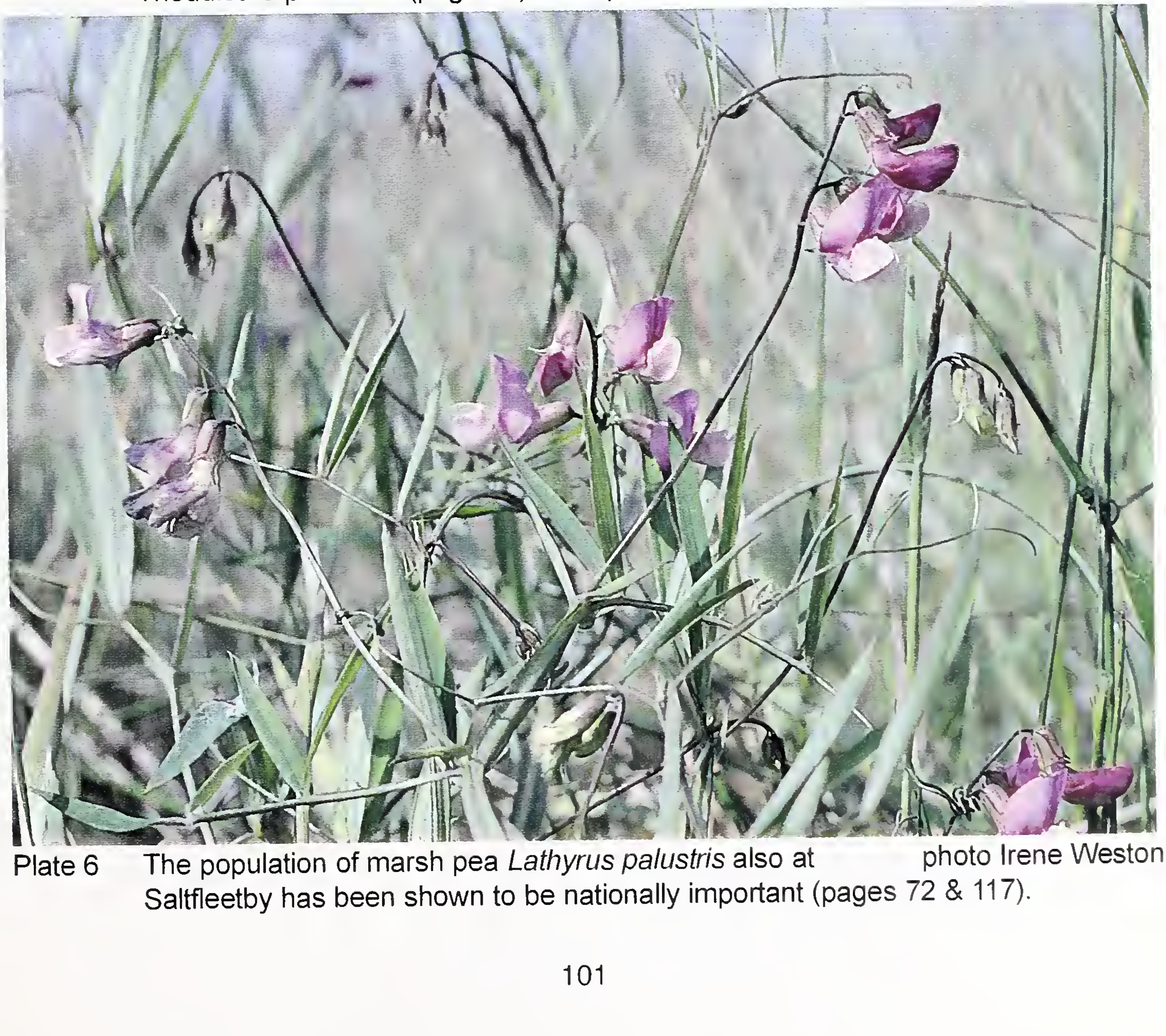


Plate 6 The population of marsh pea *Lathyrus palustris* also at Saltfleetby has been shown to be nationally important (pages 72 & 117). photo Irene Weston

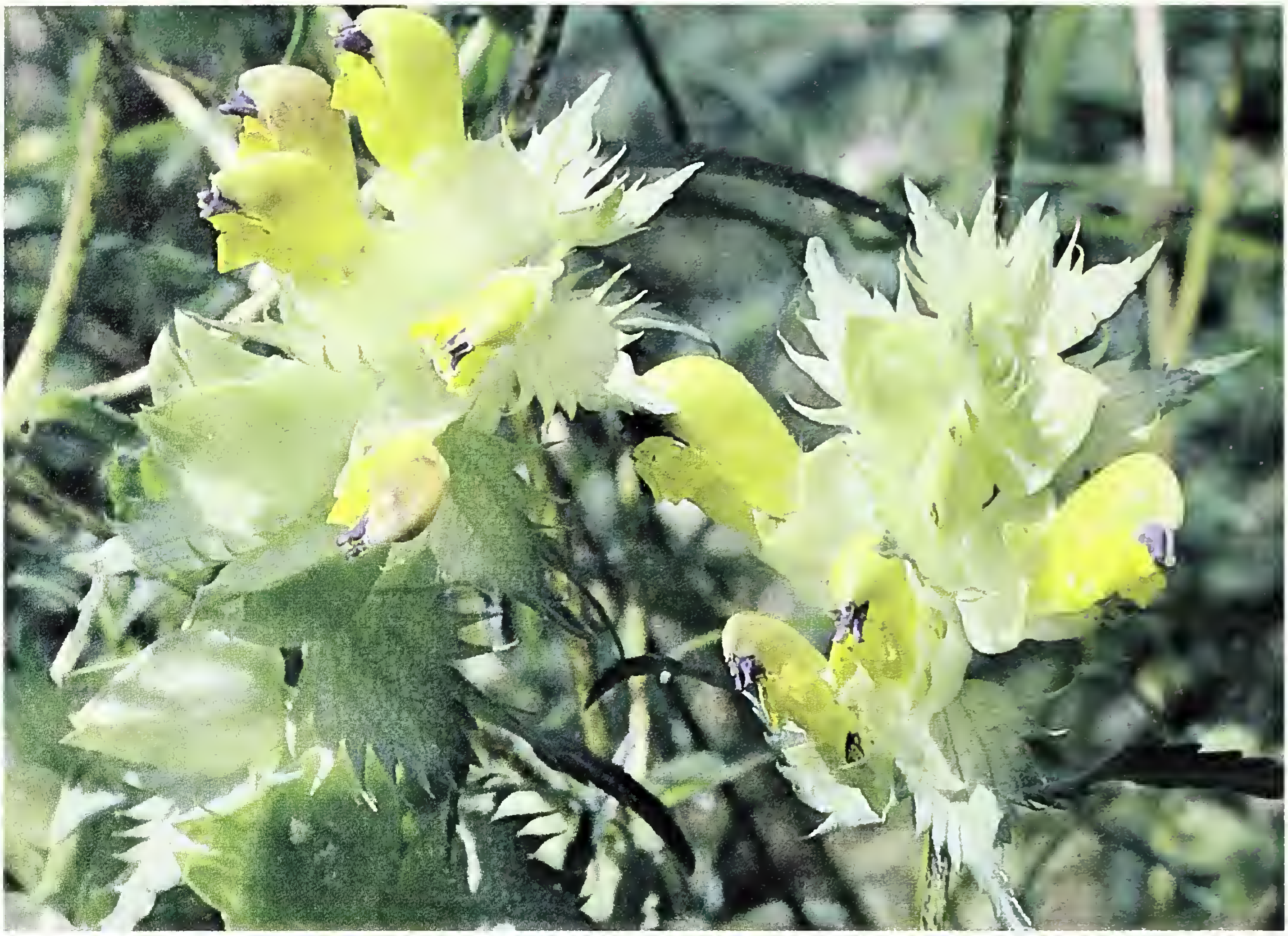


Plate 7 Greater hay-rattle *Rhinanthus angustifolius* on the old peat railway at Crowle Moors (pages 80 & 90) is nationally Vulnerable. photo Irene Weston

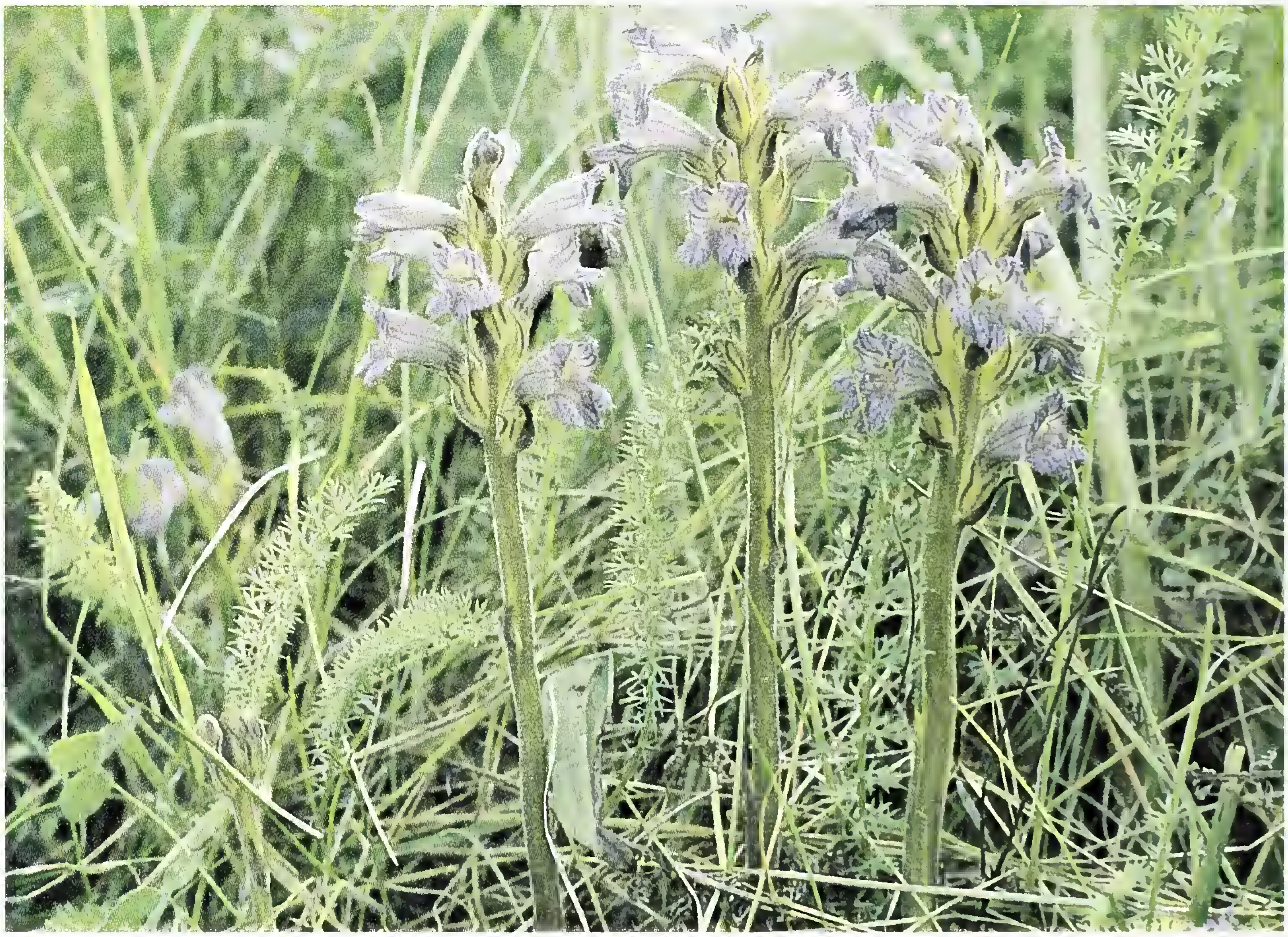


Plate 8 Yarrow broomrape *Orobanche purpurea* (pages 88 & 90) at Killingholme, also nationally Vulnerable. photo Irene Weston

Plate 9 Bare sand, heather and hawthorn at Kirkby Moor. Nectar plants and nesting sites make this an excellent site for bees and wasps (page 95). photo Roger Key

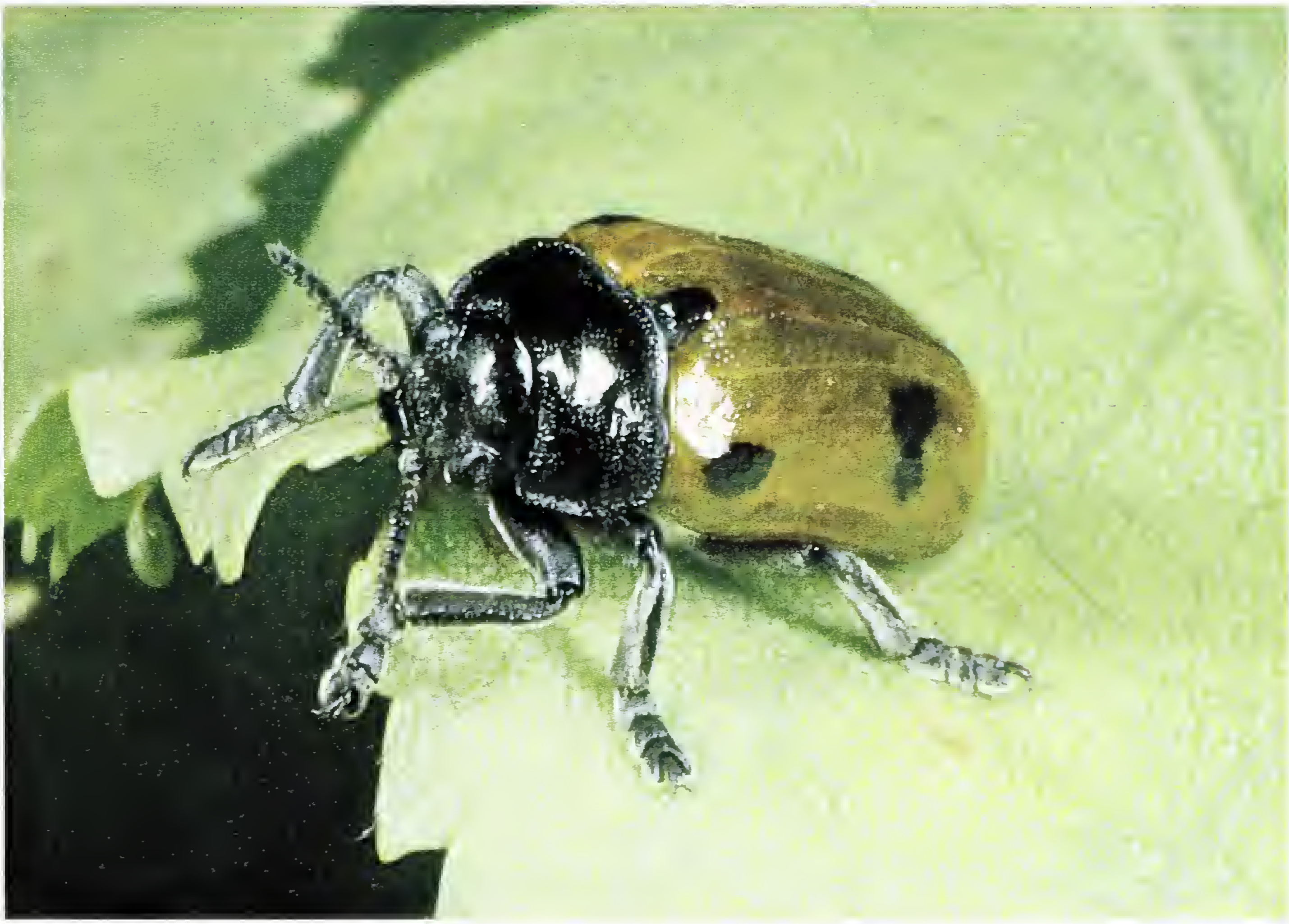


Plate 10 Ant-associated leaf beetle *Clytra quadripunctata* skillfully predicted andthen found new to Lincs by Mark Bibby (page 121). photo Roger Key

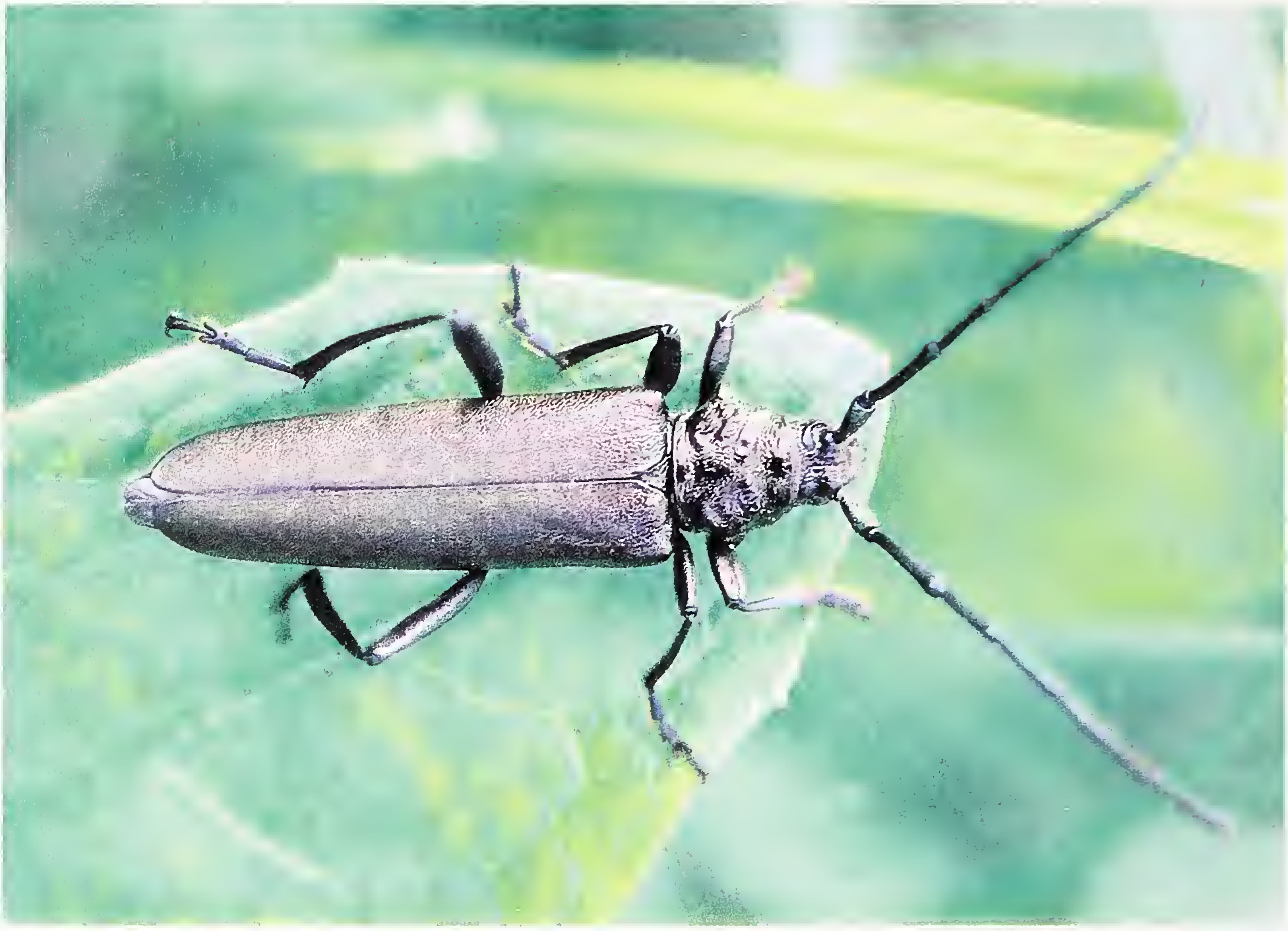


Plate 11 Musk beetle (unusual lilac-coloured variant) *Aromia moschata* photo David Knight refound in Lincs by David Knight after nearly fifty tears (page 122).

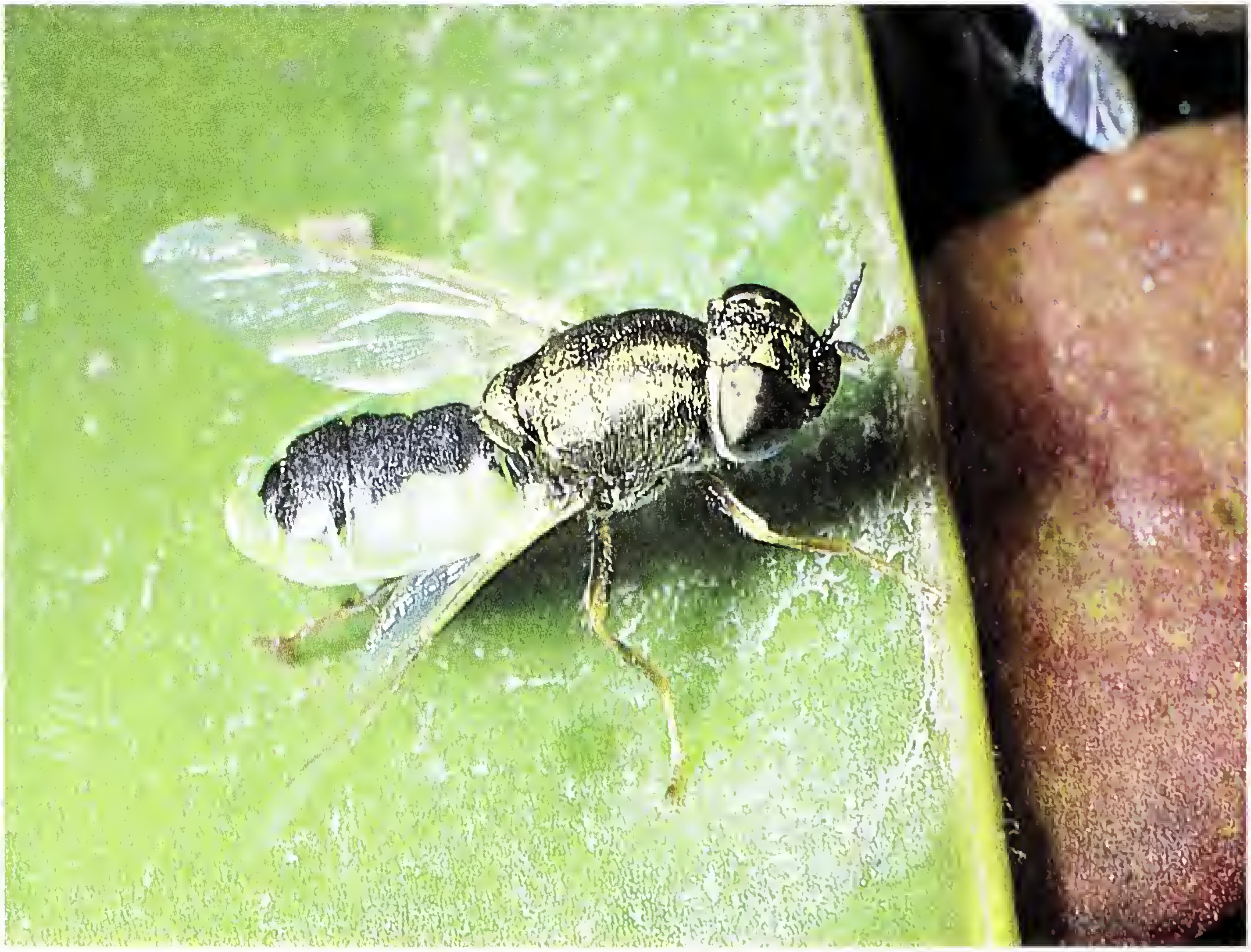


Plate 12 A wetland Soldierfly *Opladontha viridula* turned up at Baston Fen in 2000 (page 126). Photo Roger Key

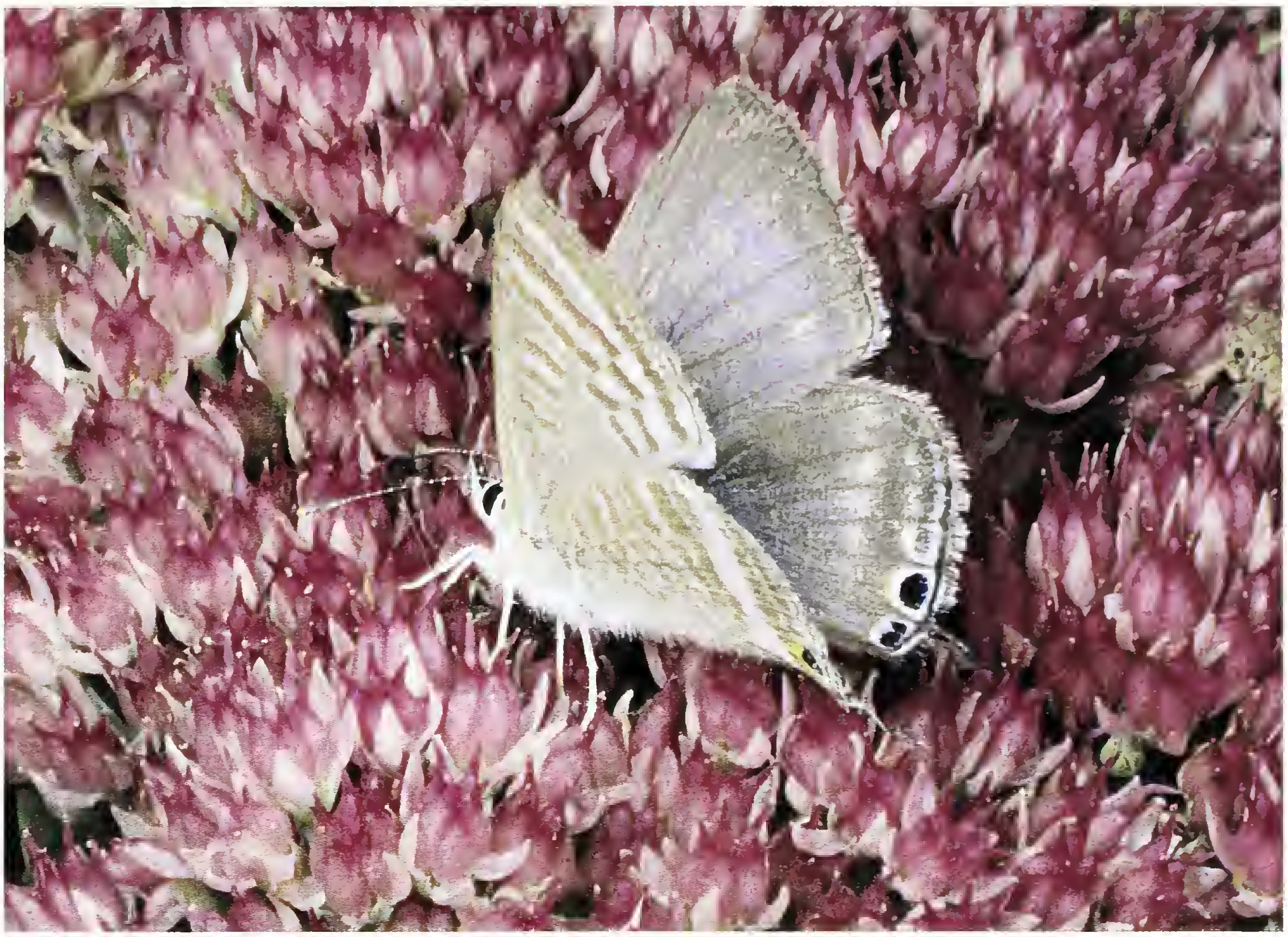


Plate 13 A new butterfly, the long tailed blue *Lampides boeticus* a very rare migrant to Britain, found by Roger Parsons (page 127). photo Roger Key

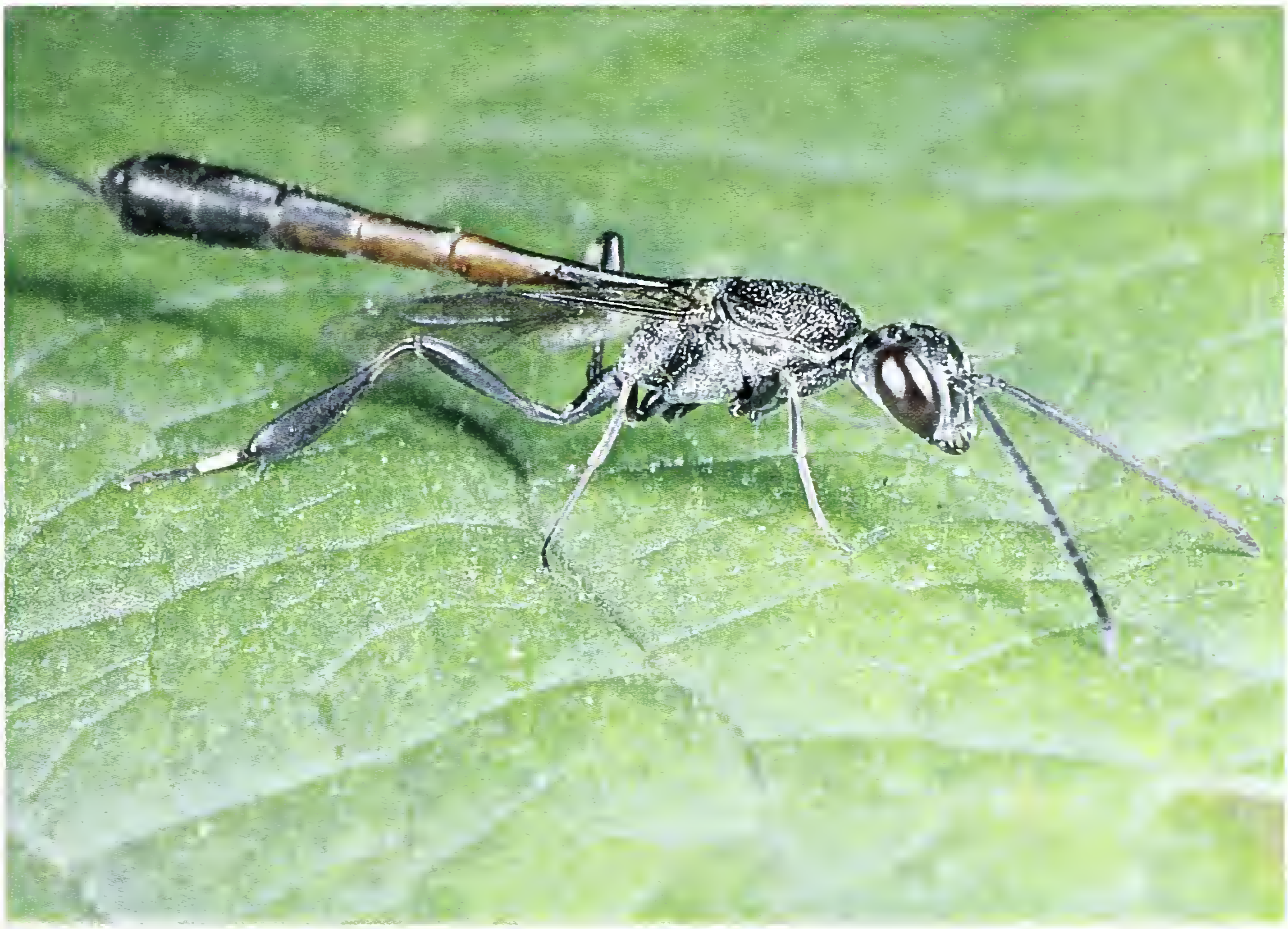


Plate 14 New to Lincolnshire, the parasitic wasp *Gasteruption jaculator* found by Martin Drake at Market Deeping (page 129). photo Roger Key

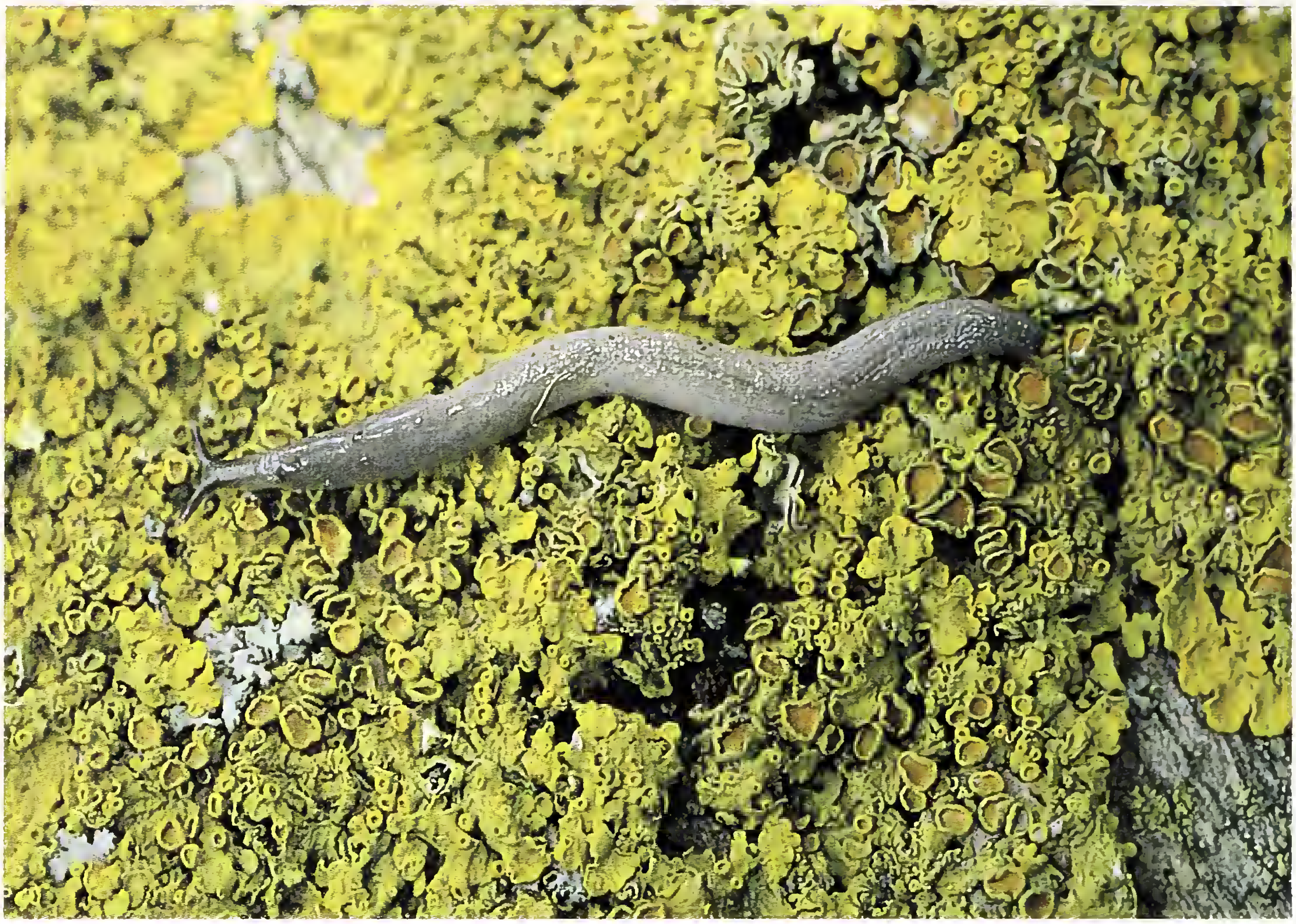


Plate 15 The first VC53 record of the slug *Boettgerilla pallens* found Allen Lazenby at Blankney Fen (page 130). photo Allen Lazenby

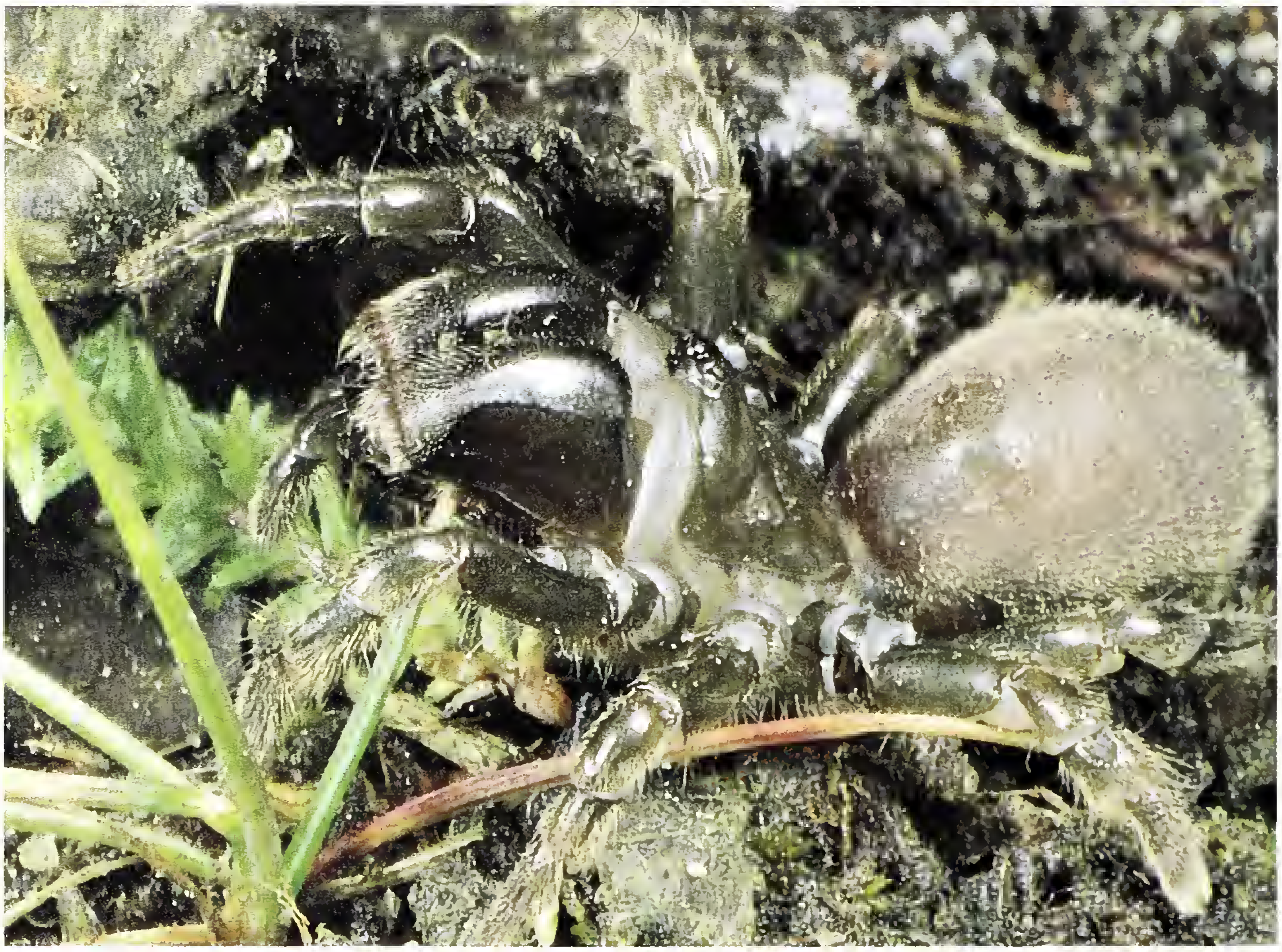
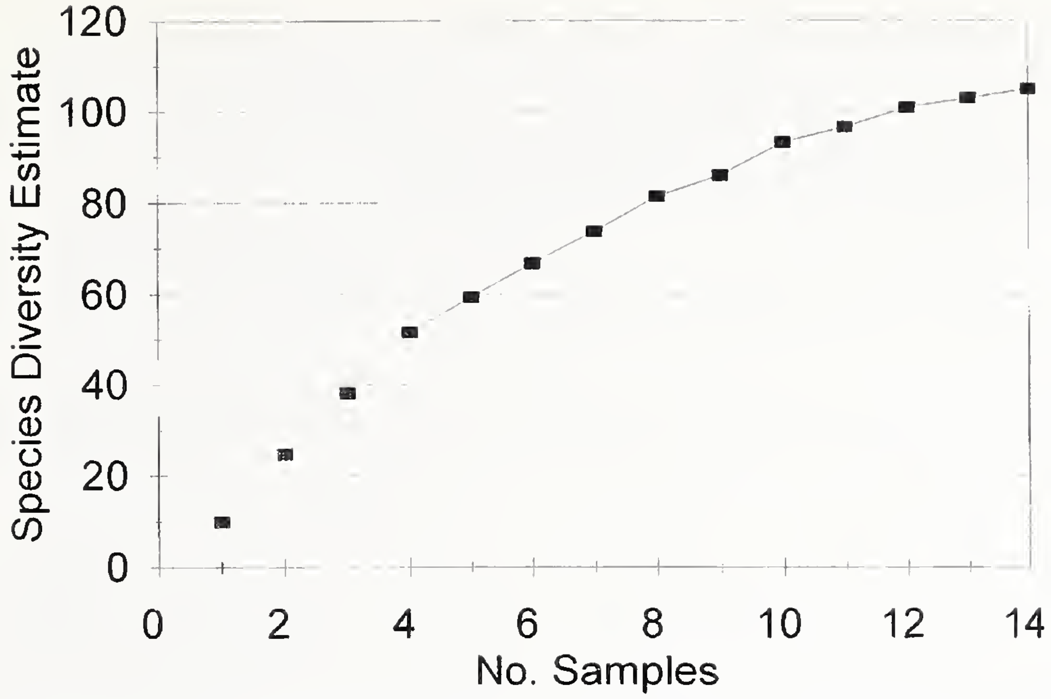


Plate 16 Formidable looking purseweb spider *Atypus affinis*, new to Lincolnshire, found by Ross Piper and Annette Binding (page 130). photo Roger Key



estimates (Table 5). Table 5 also gives the 95% confidence limits of the estimates (meaning that there is a 95% chance that the potential number of species falls within this range) and shows that about 70% of the potential number of species have been recorded.

Figure 2. The jackknife estimate of species richness for Kirkby Moor.

Table 5 Non-parametric estimates of species richness of solitary wasps and bees at Kirkby Moor using presence/absence Chao and jackknife procedures.

	Chao	Jackknife
No. recorded species	72	72
Estimates	106	105
95% confidence limits of estimates	80-132	84-126
% of species recorded	68	69

One possible complication in making estimates is the presence of vagrant species among the unique species. Vagrant species are species that are accidentally present in the samples, being outside their normal range. The presence of unique vagrant species would artificially increase the estimate of the potential number of species. Fortunately none of the recorded species can be regarded as vagrant.

Cleptoparasitic load

The cleptoparasitic load (CL) is the percentage of aculeate species that are cleptoparasites (or parasitoids) on other host aculeates. Wcislo (1987) showed that parasite behaviour among aculeate Hymenoptera correlated with geographical latitude. Thus the parasitic rates are higher in temperate regions as host populations are more synchronised in their life-history characteristics. This finding probably does not hold for desert climates where the occurrence of rainfall would tend to synchronise life history characteristics. From a review of the literature Wcislo (1987) found that the CLs for bees in Europe varied between 16% and 33%, a range of 17%

The CLs for the solitary bees from north and north midland sites of England vary between 22% and 37%, a range of 15% (Archer, 1999). The range of values of CL for the northern English sites is similar to the wider European sites (Wcislo, 1987). The CL for the solitary bees from Kirkby Moor (Table 6) falls within the range from the northern English sites.

Wcislo (1987) gives no CL values for wasps. However, for the north and north midland sites of England, CL values for the solitary wasps varies between 10% and 22%, a range of 12% (Archer, 1999). The narrow range of this variation indicates that the argument Wcislo (1987) developed for the bees also applies to the solitary wasps. The CL for the solitary species of wasps from Kirkby Moor (Table 6) falls within this range.

Table 6 The relative frequency of the cleptoparasitic (or parasitoid) species among the solitary wasps and bees recorded from Kirkby Moor.

	No. hosts (H)	No. cleptoparasites (C)	Cleptoparasitic load CL = 100 x C/(H + C)
Solitary wasps	29	7	19.4
Solitary bees	23	13	36.1

All the social species are host species, except for the *Psithyrus* species, which are social parasites on the *Bombus* species.

Aerial nester frequency

The aerial-nester frequency (AF) is the percentage of host aculeate species that have aerial nest sites. Aerial nesters may use old beetle burrows in dead wood, central stem cavities, e.g. bramble, old snail shells, or crevices in old walls or exposed on the surface of rock or other hard material. Subterranean nesters nest in the soil, usually in burrows dug by themselves, but sometimes holes and crevices are used after being altered.

The AF for all the British solitary bees is 17.9, which is similar to the AF of solitary bees from Kirkby Moor (Table 7), while the AF for all British species of solitary wasps is 46.2% which is much higher than the AF of the solitary wasps from Kirkby Moor (Table 7). The low AF value could be a consequence of failure to find more aerial-nesting species or the lack of suitable aerial-nesting habitat. Further visits will be needed to resolve this.

Table 7 The nesting habits of the host species of solitary wasps and bees recorded from Kirkby Moor.

	No. aerial nesters (A)	No. subterranean nesters (S)	Aerial nester frequency AF = 100 x A/(A +S)
Solitary wasps	7	22	24.1
Solitary bees	4	19	17.4

All the species of social wasps and *Bombus* are subterranean nesters, although *B. pratorum* is known to nest in aerial situations such as old birds' nests. Aerial nests of wild honeybees, *Apis mellifera*, were not found.

Conclusions

1. Kirkby Moor is a very good site for aculeate wasps and bees with 84 recorded species including three species of national importance.
2. The number of recorded solitary species is that which would be expected in relation to the area of the site.
3. The species quality score is similar to those of other outstanding Lincolnshire sites.
4. The species diversity estimates indicate that on average about another 30 solitary species have yet to be recorded.
5. The cleptoparasitic loads for the solitary wasps and bees support Wcislo's proposal.
6. The number of recorded aerial-nesting species of solitary wasps is relatively low.

Acknowledgements

I would like to thank the Lincolnshire Trust for Nature Conservation for permission to work on Kirkby Moor, especially to Mr. B. Redman and Mr. T.W. Bailey for their help.

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Appendix - Species List

Chrysididae - *Hedychridium ardens* (Latreille in Coquebert), *Chrysis ignita* (Linn.), *C. impressa* Schenck, *C. ruddii* Shuckard, *Trichrysis cyanea* (Linn.).

Sapygidae - *Sapyga quinquepunctata* (Fab.).

Pompilidae - *Priocnemis schioedtei* Haupt, *P perturbator* (Harris), *Pompilus cinereus* (Fab.), *Arachnospila anceps* (Wesmael), *A. spissa* (Schiødte), *Evagetes crassicornis* (Shuckard), *Anoplius infuscatus* (Vander Linden), *Episyron rufipes* (Linn.).

Eumenidae - *Ancistrocerus oviventris* (Wesmael), *A. parietinus* (Linn.), *A. parietum* (Linn.), *A. trifasciatus* (Müller).

Vespidae - *Dolichovespula sylvestris* (Scopoli), *Vespula rufa* (Linn.), *Paravespula vulgaris* (Linn.).

Sphecidae - *Tachysphex nitidus* (Spinola), *T. pompiliformis* (Panzer), *Trypoxylon figulus* (Linn.), *Crabro cribrarius* (Linn.), *C. peltarius* (Schreber), *Crossocerus elongatulus* (Vander Linden), *C. ovalis* Lepeletier & Brullé, *C. tarsatus* (Shuckard), *C. wesmaeli* (Vander Linden), *C. podagricus* (Vander Linden), *C. quadrimaculatus* (Fab.), *Oxybelus uniglumis* (Linn.), *P. dalbomi* (Wesmael), *Psen equestris* (Fab.), *P. lutarius* (Fab.), *Ammophila sabulosa* (Linn.), *Argogorytes mystaceus* (Linn.), *Mellinus arvensis* (Linn.).

Colletidae - *Colletes similis* Schenck, *C. succinctus* (Linn.), *Hylaeus communis* Nylander.

Andrenidae - *Andrena barbilabris* (Kirby), *A. bicolor* Fab., *A. chrysosceles* (Kirby), *A. fucata* Smith, *A. fulva* (Müller in Allioni), *A. fuscipes* (Kirby), *A. haemorrhoa* (Fab.), *A. helvola* (Linn.), *A. nigroaenea* (Kirby), *A. scotica* Perkins, *A. subopaca* Nylander.

Halictidae - *Halictus rubicundus* (Christ), *H. tumulorum* (Linn.), *Lasioglossum albipes* (Linn.), *L. calceatum* (Scopoli), *L. leucozonium* (Schrank), *L. rufitarse* (Zetterstedt), *Sphecodes geoffrellus* (Kirby) (=*fasciatus), S. gibbus* (Linn.), *S. monilicornis* (Kirby), *S. pellucidus* Smith.

Megachilidae - *Osmia leaiana* (Kirby), *Megachile centuncularis* (Linn.), *M. willughbiella* (Kirby).

Anthophoridae - *Nomada flava* Panzer, *N. fulvicornis* Fab., *N. leucophthalma* (Kirby), *N. marshamella* (Kirby), *N. panzeri* Lepeletier, *N. ruficornis* (Linn.), *N. rufipes* Fab., *Epeolus cruciger* (Panzer), *E. variegatus* (Linn.).

Apidae - *Bombus lucorum* (Linn.), *B. terrestris* (Linn.), *B. lapidarius* (Linn.), *B. pratorum* (Linn.), *B. hortorum* (Linn.), *B. pascuorum* (Scopoli), *Psithyrus bohemicus* (Seidl), *P. vestalis* (Geoffroy in Fourcroy), *Apis mellifera* Linn.

THE RAUCEBY WARREN *SIGARA*: A BELATED ANTICLIMAX

John Bratton

Bratton, Brierley & Kirby (1989) reported my finding two female water boatmen at Rauceby Warren which could not be identified. I had consulted others with more expertise, but we could not decide between *Sigara venusta* and *S. semistriata*, both of which are rare in Lincolnshire. Having recently collected numerous examples of both these species in Wales, I decided it was worth re-examining the Rauceby specimens. It was surprising to find they were clearly neither *S. venusta* nor *S. semistriata*, but the common *S. nigrolineata*, an opinion kindly confirmed by Thomas Huxley, the National Recording Scheme organiser.

Reference

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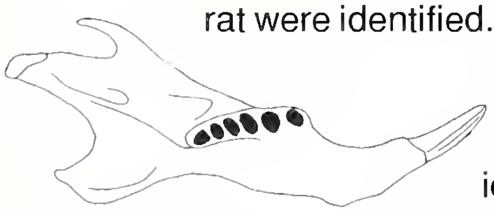
NOTE ON UNUSUAL BARN OWL PREY

Alan Lazenby

In 1999 a bag full of barn owl pellets was collected by Mary Rose from a roost on her farm near Tan Vats on Blankney Fen in South Lincolnshire for the juniors of the Sorby Natural History Society in Sheffield to dissect. This made an interesting and enjoyable evening meeting, teasing the small animal bones and fur. Skulls of common shrew, wood mouse, bank vole, field vole and juvenile rat were identified. One unusual prey item was a bird skull found by Colin Kite Birds usually comprise less than 5% of prey items of barn owls. By comparison with bird skeletons and skulls in Sheffield City Museum, I was able to match and positively identify this skull as an adult skylark. Blankney Fen comprised low-lying arable farmland with dykes and ditches; typical skylark habitat.



Further Reading

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LINCOLNSHIRE NATURAL HISTORY IN 2000

Almost all LNU recorders commented on the weather this year, too many to retain all the comments in the individual reports. Ken Rowland, who records the weather in his garden commented: "I have recorded 858mm of rain, something like 48% more than normal. On November 21st the weatherman stated that we had the wettest November since 1850 and that, if we had another 10mm it would be the wettest since 1766. We had another 13mm of rain that night." While Allan Binding stated "According to the Met Office year 2000 was the wettest in England and Wales since 1872."

January and February continued the run of very mild and very wet winters with few, only light frosts and, in mid February the rain gave way to sunny and warm weather which lasted well into March. April was the wettest on record and gave way to very cool & damp May but with couple of days of sweltering temperatures. June to August were cool and soggy with only a little sunshine in August. October saw the start of the wettest autumn on record, lasting through to mid December - torrential rain and flooding, (although Lincolnshire got off lightly compared with our neighbouring counties). Storms in autumn flattened trees across much of the county. The first frosts were in early November, although not very severe, but December frosts were, from th effects on some of the more tender garden plants, the most severe for a few years (three years' healthy growth on *Fuchsia magellanica* were cut back to ground level). A light flurry of snow gave some of us the first white Christmas for 18 years, followed by blizzard conditions all over the county two days later which had just about melted by the New Year.

Acknowledgments of Records

As always, the county recorders have acknowledged a debt of gratitude to all who have taken the time and effort, very considerable in some cases, to submit records. There are so many who send in records of different groups of animals and plants that individual recorders are now acknowledged together to avoid duplication: L Berry, M Bibby, A & A Binding, K Bradshaw, D Bromwich, D Brown, C Cheffins, G Clayton, P Cook, BJ A Credland, Cunnington, A Dale, T Davey, J Davison, B Dawson, M Dawson, R Dowse, CM Drake, W G Earnshaw, S Ely, I Farmer, S Farrow, MA&R Frankum, A&C Faulkner, OLGilbert , A Godfrey, N Goom, S Green, Z Harris, C Harrison, D Harrison, KK Harrison, P Haywood, B Hedley, R&K Heath, B Hedley, M Hill, B Hirst, NG Hodgetts, W G Hoff, C Hutchinson, J Jaines, R Jefferson, M Johnson, RW&A Johnson, R &R Key, L King, P King, P Kirby, J Kneeshaw, D Knight, V Knight, J Lamin, N Lamming, FR Lammiman, A Lazenby, R Lucas, J Margetts, AT McGowan R Nickerson, D Maxfield, G McMichael, A McGovern, J Mears, W Meek, P Nichols, J Ostler, M Overton, A Parker, R Parsons, J Petyt P Phillips, N Pike, M & I Pool, P Porter, C Potts, R Race, B Redman, EJ Redshaw, C Rieser, K&W Robertson, K Rowland, N Sanderson G Steele, C Smith, G Taylor, T Smith, JC Stanney K Stephenson, J & J Stobart, J Shackles, N Tribe, PM Troake, N Turnbull, B Van den Bos, P Waring, C Watkin, B Watkinson, G & C Weaver, I Webb I Weston, W Weston, V Wilkin, KMS Wilson, E Woods. G Wright.

FUNGI - Ken Rowland

There were 9 new county records for the year, the number of new site records runs into the hundreds due to under-recorded and new sites visited. All in all it was a far better year than first appearances suggested, the very wet early part of the summer looked decidedly unpromising but lack of frosts and cold weather later helped to give a moderately good season.

The April LNU meeting at Great West Wood proved quite profitable for so early in the year with 40 species recorded, of which 17 were new site records, mainly due to the visit being in a different time of the year from other visits. The LNU meeting in June at Whisby again turned up a surprising number of species for the time of year 32 in all which included 1 new site and county record *Taphrina pruni* an ascomycete that deforms the fruit of blackthorn *Prunus spinosa*. Dave Bromwich said that it has been there for years, although it has not found its way into the records.

At the end of April Jane Ostler rang to say that a couple of very unusual fungi had appeared at Moor Closes reserve, and after a discussion with the manager I set off hot foot on the 1st of May to investigate. There were 60 or 70 specimens of *Verpa conica*, one of the cup fungi allied to the morels, last recorded in Lincolnshire in 1895 and very nice to see. The other species Jane mentioned turned out to be a very large morel *Morchella esculenta* which, by the time I saw it, was certainly past its prime. Altogether that evening, I recorded 15 species in about an hour, which is pretty good for the beginning of May. Also in May a visit to Hill Holt Wood turned up rhododendron bud blast *Pycnostysanus azaleae,* last recorded in the 1980's.

Verpa conica - a relative of the morels - at Moor Close, last seen in 1895. photo K Rowland

I attended a British Mycological Society meeting in June and, from discussions there, it would appear that *Verpa conica, Taphrina pruni* and *Pycnostysanus azaleae* have all been quite prevalent this year. Might there be a connection with the wet weather conditions?

The Belton Park LNU meeting in July - not the month one expects to find many fungi - produced 29 species, 18 of which were new site records and 2 new county records, *Hercospora tilae* small black nodules on lime, and *Henningsomyces candida*, found under the bark of, possibly, lime by Colin Faulkner, which took some sorting out as it looks like small tubes about 1mm high although it is classified as a bracket.

The September meeting at Owlet Plantation seemed pretty sterile to start off with but, despite the rain, produced 41 species, of which 32 were new site records. In the afternoon, we proceeded to Pitt Hill Plantation which, at first sight, looked most unpromising, but the weather had improved and, in the end, it produced 17 species from a site that has not been recorded before, plus one new county record *Inocybe praetervisa* under beech.

The Fungus Foray at Tortoiseshell Wood in October is obviously a meeting I dare not miss. There was a foray there in 1977, led by the late Dr Grace Waterhouse, so we had a lot to live up to. 89 species were recorded then and, this time, 76 species were found in the wood and 23 species in the meadow which wasn't visited in 1977. Interestingly there were 38 new site records and one new county record; a rather fine specimen of *Amanita* ceciliae*, found by Ron Williams. Lawn Wood in the afternoon yielded 73 species.

As a last offering on Christmas Eve David Knight brought me a nice clump of oyster mushrooms *Pleurotus ostreatus* from an old beech trunk in Skellingthorpe which again points to the rather mild conditions that have prevailed late this year.

Macrotyphula fistulosa var. *contorta* found new to new to Lincs on birch at Whisby by Phil Porter. photo K Rowland

Finally, a interesting left-over from 1999, identified too late for last years report, was *Macrotyphula fistulosa* var. *contorta* a rather uninteresting lump of fawn, rubbery-like substance on old birch branches pointed out to me by Phil Porter at Whisby in October 1999 new to Lincolnshire.

MOSSES, LIVERWORTS AND LICHENS - Mark Seaward

Mainly due to the invaluable work of Frank Lammiman and Christine Rieser, many bryophyte records were added to our registers over the past year; their most notable finds were *Anthoceros punctatus*, *Barbula spadicea*, *Polytrichum strictum* and *Scleropodium cespitans* (county records), *Marchantia polymorpha* ssp. *ruderalis*, *Pellia neesiana* and *Plagiomnium ellipticum* (vice-county records); they also added 42 divisional and more than 80 10km x 10km grid square records.

It is interesting to note the return of certain epiphytic bryophytes to the county over the past few years, mainly as a consequence of the significant reduction in air pollution emanating from industrial sources to the west. Several of these species, such as *Cryphaea heteromalla*, *Ulota bruchii* and *U. phyllantha*, have not been seen in the county for more than 80 years, *Orthotrichum lyellii* had been rarely seen over this period, and some, such as *O. affine* and several liverworts, are clearly expanding.

Of particular lichenological interest was the discovery of *Acarospora anomala*, new to Britain. This metalliferous lichen, collected by J.Margetts in 1995 from wooden fence rails near Brigg which were erected in the 1970s (and subsequently treated with a chemical containing copper, chromium and arsenic). A tentative name of *A. anomala* given by M.R.D. Seaward was only recently confirmed by Dr N. Golubkova and Dr O.W. Purvis; my re-examination of the site in March 2000 showed the taxon to be extensive along two rails over more than 250 m, being associated with *Candelariella vitellina*, *Lecanora polytropa* and *Scoliciosporum umbrinum*. (See also: *Br.Lichen Soc.Bull.* **87**: 76, 2000.)

A visit by Dr O.L. Gilbert to Barton-upon-Humber in July 2000 as part of his country-wide study of maritime habitats proved most fruitful: *Pyrenocollema halodytes* and *Verrucaria ditmarsica* were found on coastal defences constructed of Magnesian Limestone and

Rinodina pityrea (infected by the fungus *Lecanidion atratum* (Hedw.) Rabenh.) was found on a wooden fence by a saline lagoon - all new to the county.

As part of the British Lichen Society's churchyard survey, a further 24 churches were investigated by the author in 2000; although all the county's 10 km x 10 m squares have been covered to date, much still remains to be done as only 296 of a possible c.676 have so far been investigated.

In the light of recent lichenological work, five county records (*Acarospora anomala, Pyrenocollema halodytes, Rinodina pityrea, Verrucaria ditmarsica, Xanthoria ucrainica*), two vice-county records (*Lecania inundata* and *Micarea lignaria*), 35 divisional records and more than 120 grid square records have been added to our registers. Lichen recording in the county since 1960 on a 10 km x 10 km grid square basis is as follows: in all, there are 6578 records with an average of 73 per square. The flora can be summarized as follows: 312 taxa have been recorded from Lincolnshire (299 since 1960), of which 2 and 11 have not been seen for more than 60 and 100 years respectively.

The following moss and liverwort records were contributed by T.L. Blockeel (TLB), N.G. Hodgetts (NGH), F.R. Lammiman (FRL) and C. Rieser (CR) in 2000 unless otherwise indicated, and the lichen records were contributed by the author unless otherwise stated.

Mosses

Amblystegium tenax (Hedw.) C.E.O.Jensen + 8
Barbula cylindrica (Tayl.) Schimp. + 6
B. revoluta Brid. + 8
B. spadicea (Mitt.) Braithw. + 7 (College Wood, 2000, FRL & CR, **NCR**)
B. vinealis Brid. + 3, 7
Bryum flaccidum Brid. + 2
Cratoneuron filicinum (Hedw.) Spruce + 9 (1997, FRL & CR)
Cryphaea heteromalla (Hedw.) D.Mohr + 10
Dicranum tauricum Sapehin + 8
Drepanocladus cossonii (Schimp.) Loeske + 8 (Legbourne, 1921, E.F.Noel, herb.NMW), 16 (Deeping Fen, 1898, S.Gasking, herb. NMW; as *D.revolvens* var. *intermedius* in *Naturalist* **1902**: 90) - see Blockeel,T.L. in *Bull.Br.Bryol.Soc.* **75**: 32-40, 2000; there is also a record of *D.revolvens* var. *cossonii* from Scotton by G.H.Allison dated 1931 (see *Br.Bryol.Soc.Report* **1931**: 350)
Fissidens cristatus Wils. ex Mitt. + 5
Homalothecium lutescens (Hedw.) Robins. + 3
Hypnum lacunosum (Brid.) Hoffm. ex Brid. + 10
Isothecium myosuroides Brid. + 16
Orthotrichum affine Brid. + 6
O. anomalum Hedw. + 5
O. cupulatum Brid. + 7
O. pulchellum Brunton + 14
Plagiomnium affine (Funck) Kop. + 9
P. ellipticum (Brid.) Kop. + 8 (Welton Vale, 2000, FRL & CR, **VCR**)
Polytrichum strictum Brid. + 5 (Scotton Common, 2000, FRL & CR, **NCR**)
Rhynchostegium confertum (Dicks.) Br.Eur. + 6
Schistidium apocarpum (Hedw.) Br.Eur. + 5, 6
Scleropodium cespitans (C.Müll.) L.Koch + 8 (Welton Vale, 2000, FRL & CR, **NCR**)
Seligeria paucifolia (Dicks.) Carruthers + 10
Sphagnum papillosum Lindb. + 13 (Swanholme, 1987, NGH, **VCR**; a record from Nocton by W.Fowler dated 1880 is not substantiated by herbarium material)
Ulota bruchii (Hornsch.) ex Brid. + 7, 8, 11, 13, 16
U. phyllantha Brid. + 7

Liverworts

Anthoceros punctatus L. + 8 (Silverine Meadows, 2000, FRL & CR, **NCR**)
Marchantia polymorpha ssp. *ruderalis* Bischl. & Boisselier + 5 (Peacocks Plantation, 2000, FRL & CR, **VCR**), 15 (Belton House, 1999, TLB, **NCR**)
Metzgeria fruticulosa (Dicks.) Evans + 14
M. furcata (L.) Dum. + 2
Pellia neesiana (Gottsche) Limpr. + 10 (Kirkby Moor, 2000, FRL & CR, **VCR**)
Plagiochila asplenoides (L.) Dum. + 2
Riccardia chamedryfolia (With.) Grolle + 5, 10
Riccia glauca L. + 8
R. sorocarpa Bisch. + 8

Lichens

Acarospora anomala H.Magn. + 3 (nr Brigg, 1995, J.Margetts; **NCR**; New to Britain)
A. smaragdula (Wahlenb.) Massal. + 10
Agonimia tristicula (Nyl.) Zahlbr. +4, 14
Caloplaca flavovirescens (Wulfen) Dalla Torre & Sarnth. + 13, 16
Candelariella reflexa (Nyl.) Lettau + 8
Collema tenax var. *ceranoides* (Borrer) Degel. + 6
Lecania inundata (Hepp ex Körber) M.Mayrhofer + 3 (Barton-upon-Humber, 2000, O.L.Gilbert, **VCR**)
Lecanora intricata (Ach.) Ach. + 13
Micarea denigrata (Fr.) Hedl. + 3
M. lignaria (Ach.) Hedl. + 16 (Walcot, 2000, MRDS, **VCR**)
Opegrapha saxatilis auct. + 16
Parmelia caperata (L.) Ach. + 14

P. glabratula ssp. *fuliginosa* (Fr.ex Duby) Laundon + 14
P. mougeotii Schaerer ex D.Dietr. + 8, 14
P. revoluta Flörke + 14
P. verruculifera Nyl. + 9
Pertusaria albescens (Huds.) M.Choisy & Werner + 4
Phaeophyscia nigricans (Flörke) Moberg + 10
Placynthiella icmalea (Ach.) Coppins & P.James + 16
Porpidia crustulata (Ach.) Hertel & Knoph + 9
Pyrenocollema halodytes (Nyl.) R.Harris + 3 (Barrow Haven, 2000, O.L.Gilbert, **NCR**)
Ramalina farinacea (L.) Ach. + 6
Rinodina pityrea Ropin & H.Mayrhofer + 3 (Barton-upon-Humber, 2000, O.L.Gilbert, **NCR**)
Trapeliopsis granulosa (Hoffm.) Lumbsch + 9, 14
Usnea subfloridana Stirton + 14
Verrucaria ditmarsica Erichsen + 3 (Barrow Haven, 2000, O.L.Gilbert, **NCR**)
V.macrostoma Dufour ex DC. + 8
Xanthoria polycarpa (Hoffm.) Th.Fr. ex Rieber + 7, 8
X. ucrainica S.Kondr. + 10 (Martin, 2000, MRDS, **NCR**)

The author is most grateful to Mr T.L. Blockeel and Dr B.J. Coppins for their identification/confirmation of the more critical material.

BOTANICAL REPORT - Irene Weston

As a prelude to the report, there is one important announcement. In 2000, Dave Bromwich and Roger Parsons were successful in obtaining a grant for the LNU from the Esme Fairburn Trust (spelling??) to computerise all botanical data for the county, including recent and historical records from the LNU and BSBI This will ensure that our historical records will be safeguarded and Alan Binding will be inputting records over the next three years. (Abbreviations for recorders used in ths report ZH - Zella Harris, PK - Paul Kirby, IW - Irene Weston, GW Violet Wilkin).

A 1999 list from Mr R. Lamming was not included in last year's report. It included birds nest orchid *Neottia nidus-avis* in Ingoldsby Wood (SK93) which has not been recorded for VC 53 since before 1960. Recent county records are from VC 54 in the Bardney Limewoods. Also on his list were adders tongue fern *Ophioglossum vulgatum* from Careby Wood, new for TF01 and over 100 *Dactylorhiza praetermissa* from Twyford Wood (SK92).

In 2000 Mrs V. Wilkin recorded *Crassula helmsii* and *Myriophyllum aquaticum* from the fish pond at Black Walk Nook (SE 91) and *Astragalus glycyphyllos, Nicandra physalodes* (12 plants) and *Persicaria hydropiper* from an adjacent field entrance as well as *Anagallis tenella, Lythrum portula* from Twigmoor Heath

Birds nest orchid *Neottia nidus-avis*, rediscovered in VC53 after over 40 years. photo I Weston

(SE 9305) and *Chaenorhinum minus, Juncus compressus* and *Legousia hybrida* from Messingham reserve SE9103.

VW, IW, ZH and Mrs K. Negora found a flourishing colony of crown vetch *Securigera varia* - at Broughton Woods (SE948096) and *Astragalus glycyphyllos, Hypericum pulchrum* and one patch of *Calluna vulgaris* from Rowland Plantation (SE960110) and wild hop *Humulus lupulus* from the verge of the B1208 just south of Castlethorpe (SE983074).

Mr Paul Kirby has continued his work in Laughton Forest (SK89/SE80) recorded almost 500 species of fern and flowering plant on land managed by the Forestry Commission. These included a dozen species listed as endangered or vulnerable in Lincolnshire (Smith, 1996) and in addition over 50 plants described as rare, uncommon or understood to be declining in the county (Gibbons 1975). Rarities included *Carex curta, Drosera rotundifolia Eleocharis multicaulis, Hypericum elodes, Lythrum portula, Pinguicula vulgaris*, (the first Lincolnshire record since 1980), *Potentilla argentea, Schoenus nigricans* (the only extant site for the two Lincs VCs) *Scutellaria minor* as well as small colonies of *Apera interrupta* and *Montia fontana. Anagallis tenella* was locally plentiful and included one extensive patch of strikingly beautiful deeply coloured plants. Other records include *Astragalus glycyphyllos*, *Carex echinata*, *Carex rostrata*, *Eleogiton fluitans*, *Epipactis helleborine, Eriophorum vaginatum*, *Gnaphalium sylvaticum*, *Hypericum pulchrum*, *Mentha arvensis*, *Myosoton aquaticum*, *Potentilla palustris*, *Myrica gale*, *Rumex maritimus*, *R. palustris, Teesdalia nudicaulis.*, *Viola palustris, Blechnum spicant Oreopteris limbosperma* and *Polypodium vulgare.* A substantial colony of *Hieracium umbellatum* was noted beside one of the main forest roads at Laughton (PK, IW, VW, ZH), a species also recorded at Cleethorpes (IW and Ruth Nickerson, 1999) and "always" present at Burton and Whisby. and easily recognised, not abundant and is not mapped in Atlas 2000, (only the *Hieracium* aggregate is being mapped), it would be of interest to record it more fully.

Laughton Forest is the only Lincolnshire site for black bog rush *Schoenus nigricans*. photo I Weston

In her Presidential address to the LNU in 1939 Joan Gibbons commented (Gibbons 1939) " it is probable that the planting of Government forests may change the flora of Scotton Common to some extent but at any rate it will have more chance than if inundated with bungalows, which is the lot of many a botanist's paradise in other parts of England". The results of Paul's survey confirm that it remains a botanical "Mecca" of Lincolnshire.

Checks were made on some of our rarer species to update our records. In TF26 May lily *Maianthemum bifolium* was flourishing and royal fern *Osmunda regalis* was refound in Knaith Park Wood (SK88). *Osmunda*, present as two very substantial 'trunks', the largest in the county, had large fruiting fronds on both and conservation work had been undertaken around it. Four plants of marsh St John's wort *Hypericum elodes* were found in an adjacent boggy ditch and *Potamogeton polygonifolius* was seen in open water close by along with purple loosestrife *Lythrum salicaria* and skullcap *Scutellaria galericulata* were plentiful. Musk flower *Mimulus moschatus* present in quantity is a new county record (IW, VW, PK).

Mrs Kay Heath surveyed *Sium latifolium* in its Lincolnshire localities for the Trust. The distribution map in Scarce Plants in Britain (Stewart et al. 1994) shows how this species has undergone "a catastrophic decline" along the coast.

I was contacted in May by Stephen Hartley and Dr Bill Kunin of Leeds University about marsh pea *Lathyrus palustris* at Saltfleetby(plate 6) - the size of population and associated plants. Their subsequent quantitative survey showed that our population is of national significance.

At Gibraltar Point (TF55) two clumps of the rare long-bracted sedge *Carex extensa* were found near the Fenland Lagoon by Kevin Wilson. A patch of woodsage *Teucrium scorodonia* was found in a rabbit-grazed area near the car park north of the main entrance by IW, PK & VW. The Lincs Flora (p.47) states " A single patch of wood sage *Teucrium scorodonia* is found at Gibraltar Point," - the same patch?? At least 7 plants of yellow horned poppy *Glaucium flavum* were seen along the strandline and henbane *Hyoscyamus niger* near the ringing station.

Mr Nick Lamming sent in a specimen of *Bromus hordaceus ssp. longipedicillatus* - det. Dr Laurie Spalton - from TF06, a new record for VC 53 (Weston 2000).

Mr Malcolm Pool has contributed very substantial records to Atlas 2000 and continues to record extensively in the southwest of VC53. In 2000 he co-ordinated his records on a tetrad basis and now has data on the distribution of over 500 species within the 18 10km squares in this corner of the county. He has recorded stone parsley *Sison amomum* from 42 sites from 1996-2000 with a concentration west of the marlstone limestone scarp particularly around Dry Doddington, a concentration on the Oxford and Kimmeridge clay east of the South Kesteven Plateau between Sleaford and Uffington and a third focus where the boulder clay overlays the limestone of the South Kesteven plateau. In the first atlas (Perring and Walters 1962) stone parsley is shown to have been recorded in 7 of the 18 10km squares. Mr Pool shows its distribution through 33 tetrads within 12 of these. It is listed as endangered in the county (Smith 1996); better understanding of its distribution means it can now be removed from this list.

Mr Pool found both fluellens *Kickxia spuria* & *K. elatine* at Temple Hill near South Witham(SK92), dominant as a grey-green colour in a field harvested for oil seed rape. The fluellens are more abundant in the south of the county and are both at their northern limit in Lincolnshire. His other significant records include: *Valerianella dentata* (2 sites) at Hungerton (SK92) and Welby (SK93), *Ranunculus parviflorus* Croakhill Plantation (TF008212), corn gromwell *Lithospermum arvensis* at Braceborough (TF01), Cranwell (TF04) and Scredington (TF04), common club-rush *Schoenoplectus lacustris* in a small pond between Boothby Pagnell and Parsonage Wood (SK93- new to the square and, even in this small pond, is under threat), 100s of night-flowering catchfly *Silene noctiflora* with Venus' looking glass *Legousia hybrida* and 16 large plants of corn parsley *Petroselinum segetum* on the edge of a beet field on Normanton Heath (SK94), prickly poppy *Papaver argemone* at Honington (SK94), long-stalked cranesbill *Geranium columbianum* at Corby Glen (SK92) on the verge of Station Road in disturbed ground, bulbous canary grass *Phalaris aquatica* from the roadside near Ingoldsby (SK93) and Witham-on-the-Hill (TF01), bastard cabbage *Raphanus rugosum* from a bridle way at Little worth Barn (TF02).

One of Mr M & Mrs I Pool's most exciting finds was of 766 plants of clustered bellflower *Campanula glomerata* on the verges of Heath Lane on Ponton Heath (SK92). associated with agrimony *Agrimonia eupatoria,* harebell *Campanula rotundifolia,* buckthorn *Rhamnus cathartica,* yellow rattle *Rhinanthus minor,* small scabious *Scabiosa columbaria,* black bryony *Tamus communis* and zigzag clover *Trifolium medium.*

Mr Kerry Harrison recorded a *Salvinia* sp. from TF01 in the late summer of 1999 and also brought to my notice a note in Plantlife Summer 2000 (Smart 2000) of a record of giant salvinia *Salvinia molesta* near Lincoln. *Salvinia* is stated to be "one of the most hated plants in the US". Mr Harrison has also found *Cotoneaster x suecius* (det. J. Fryer) from a railway line at Castle Bytham (SK91), spreading meadow-grass *Poa humilis*, a difficult grass to identify, from Pinchbeck Slipe (TF12) and a substantial population of floating club-rush *Eleogiton fluitans* on the South Forty Foot. All three are new square records.

Mr and Mrs Keith Robinson's records included " a highlight for bee orchids at both Kirkby and Tattershall pits" and large colonies of southern marsh, common spotted and hybrids from Tattershall as well as a single plant of *Carduus tenuiflorus.* Other records of interest were *Lythrum salicaria* from Ancaster Woodland Waters and *Convallaria majalis. Stachys palustris* from Anions Gowt (TF34), - various established garden escapes: from Colby Quarry (SK96) *Aquilegia vulgaris, Iris germanica, Lamium maculatum, Sisyrinchium striatum, Helleborus foetidus, Hesperis matronalis, Eschscholtzia californica* and *Brunnea macrophylla, Origanum vulgare* from the Witham Way at Kirkstead (TF16) *Borago officinalis, Campanula persicifolia* and *Lobelia erinus* from Kirkby Pits (TF26) and *Solidago gigantea* near Holbeach St Matthew (TF4033).

Mr and Mrs Lesley Sharp found a new site for greater horsetail *Equisetum telmateia* and monkshood *Aconitum napellus* (2 plants) at Temple Wood (TF02). They also found *Dipsacus pilosus & Poa nemoralis* from Twyford Wood (SK92) and, with Mr Peter Acton, *Dactylorhiza fuchsii, D. praetermissa* and heath-spotted orchid *D. maculata ssp. ericetorum.* The latter is one of our rarities and new to the square. Mrs Sharp also recorded *Potamogeton crispus* and horned pondweed *Zannichellia palustris* from a ditch near Surfleet Seas End (TF22).

Graham Weaver recorded corn marigold *Chrysanthemum segetum* in an onion field at Coningsby (also present in cereal there in 1999, IW) and a mature broad-leaved lime *Tilia platyphyllos* in Langton Churchyard (TF390704) new to the square. He also found knotted hedge-parsley *Torilis nodosa* and marsh pennywort *Hydrocotyle vulgaris* from Langton Sheepwalks (TF392718), both new for TF37.

Mrs Claire Harrison recorded weasel's snout *Misopates orontium* (confirmed by IW) from Baumber Farm (TF27). A rare casual or native in Lincs (but casual here at Baumber) it has not been seen in Lincs since 1950 when it was recorded by AC Foottit at Barrowby (SK83).

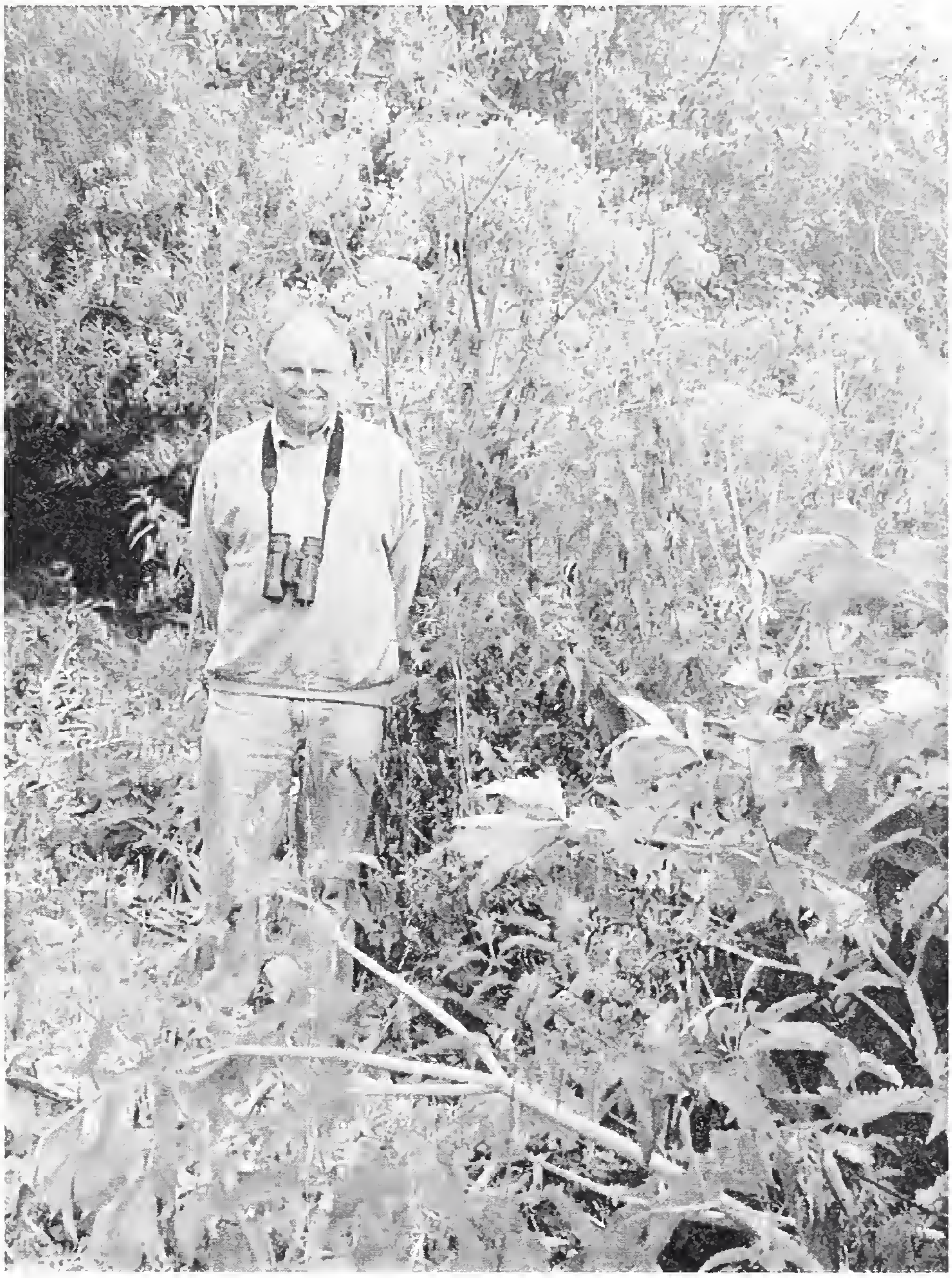
The thrift *Armeria maritima ssp. maritima* reported from the roadside at Langton-by-Wragby had seeded and 7 young plants were growing alongside the original plant amongst the *Cochlearia danica* (IW).

Graeme Clayton found four new species from the Hartsholme-Swanholme N.R.: *Anthyllis vulneraria* from Hartsholme and *Equisetum palustre, Trifolium fragiferum* and *T. striatum* from Swanholme.

Other records of interest in 2000: shining cranesbill *Geranium lucidum* from Alford (TF47) by Colin Hutchinson, larkspur *Cosolida ajacis* amongst sugar beet at Welton (TF001782). by Ron Saunders, *Montia fontana* from Lincoln South Common (SK96) by Mr F. Lammiman, *Menyanthes trifoliata* from a ditch near Tattershall Church (new for TF25) by Derek Brookes, bladder sedge *Carex vesicaria,* water horsetail *Equisetum fluviatile*; horned pondweed *Zannichellia palustris* and lesser chickweed *Stellaria pallida* from SK97 by David Knight, a large clump of wild marjoram *Origanum vulgare* on the Lincoln Bypass new to SK96 by IW, a new record for climbing corydalis *Ceratocapnos claviculata* at Wheelabout Wood (TF36) by Gary Steele.

The LNU presidential meeting at Whisby Nature Park an albino broad-leaved helleborine *Epipactis helleborine*, discovered earlier, was much photographed (page 136). Dr John Richards (*Epipactis* referee) writes " This type of achlorophyllose mutant occurs quite frequently in *Epipactis helleborine*. I have had at least five previous reports and have seen it myself once. Of course most chlorophyll mutants of this type never survive. Their survival and persistence in *Epipactis* is remarkable testament to the power of mycorrhiza in this genus, which are apparently able to grow and even flower perfectly well without synthesising any sugars themselves at all." Interestingly a report of this mutation in *E. purpurata* in Savernake Forest was published in B.S.B.I. News this year (Oliver 2001).

Lastly Mr Peter Haywood and I.W. visited some of the localities of *Angelica archangelica* and *Oenanthe crocata* on the banks of the River Trent and were able to fill in some tetrad gaps. The site at Marton SK 8381 was exceptional with a large number of tall plants.



Large plants of garden angelica Angelica by the Trent at Marton - Mr peter Haywood for scale! photo I Weston

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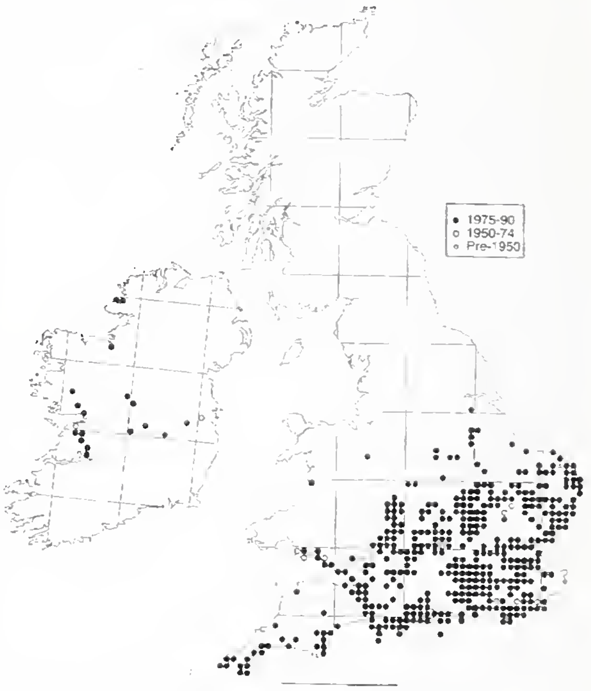
DRAGONFLIES & DAMSELFLIES - John Redshaw

The year 2000 was generally poor for Odonata compared with previous years. However most regularly watched sites did manage to produce a good variety, even if numbers of the larger species tended to be lower than would be expected.

Red-eyed damselfly *Erythromma najas* continued to extend its range, and new site records included Pinchbeck Slipe nature reserve, Tattershall Pits and Horncastle. Banded demoiselle *Calopteryx splendens* was also found at new sites, on the River Bain at Tattershall Pits, and at Roughton where it visited a garden pond. Four-spotted chaser *Libellula quadrimaculata* was also new for the Tattershall site.

Messingham Sand Quarry NR is one of the few sites in the county that produces acid loving species such as common hawker *Aeshna juncea* and black darter *Sympetrum danae*. It also attracts some of the more southern species such as black-tailed skimmer *Orthetrum cancellatum* (at its most northern location in England) (Merritt et al. 1996), broad-bodied chaser *Libellula depressa*, and migrant hawker *Aeshna mixta*.



Black-tailed skimmer *Orthetrum cancellatum* from Merritt et al. 1996.

Reference

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SHIELDBUGS - Annette Binding

Although there were no new species found, there were some very good records. The blue bug *Zicrona caerulea*, was recorded five times at four different sites in the county. Usually I only receive a single record of this species each year. John Lamin added a new site when he recorded it at Grimsthorpe Park on 29th May and 2nd June and Colin Smith added a further site when he found the species at Nettleham Fields, Lincoln on 1st October. Blue bugs were also found at two previously known sites; Phil Porter recorded one at Whisby Nature Park on 9th August and I found one at Chamber s Wood on 9th June.

The green shieldbug *Palomena prasina* continued to turn up at new sites including Chambers Wood and Kirkby Moor Reserve showing that it is still extending its range within the county. Roger Key found *Neotiglossa pusilla* at the railway borrow pits at Spalding on 8th June and a new site was added for *Picromerus bidens* when we recorded a single nymph at Baston Fen on 19th July. It has now been found at five sites in the county.

BEETLES - Roger Key

Despite the bad weather, which considerably cut down field time regardless of the effect it had on the beetles themselves, it was a good year for beetle recording in the county. Nine new species were recorded and a number of species turned up again that had not been seen for a very long time. Statuses as per Hyman & Parsons (1992).

Pride of place amongst the new species must be the leaf beetle *Clytra quadripunctata* (plate 11) a black-spotted yellow species feeding on birch, but which spends its early life in the nest of wood-ants. In the spring I received a phone-call from Mark Bibby, asking how to recognise the species as he wished to look for it in St Helen's Wood, home of one of the very few populations of wood ants Formica rufa, in the county. I have to admit to being unencouraging. *Clytra* has never been in the county and is a large, unmistakable beetle, unlikely to be overlooked. Sure enough, on 1st June, Mark found the half a dozen individuals and again on 12 other occasions up to 7th July, totalling around 59 observations with a maximum of 11 seen on one day, all of which were systematically recorded and mapped. Mark is to be congratulated on persisting with his observations, despite my initial discouragement, and for his subsequent excellent systematic recording.

Colin Smith made a surprising discovery at Osgodby Moor on 15th July, when he found the dung beetle *Aphodius zenkeri* (NB) on 15th July. This species much prefers deer dung in shady situations and is usually thought of as occurring in old deer parks rather than conifer plantations, though no doubt there are plenty of deer in the area. Also in dung, this time at Hubbards Hills, Louth, Colin found the small beetle *Cercyon lugubris* (NB) new to Lincolnshire on 20th August.

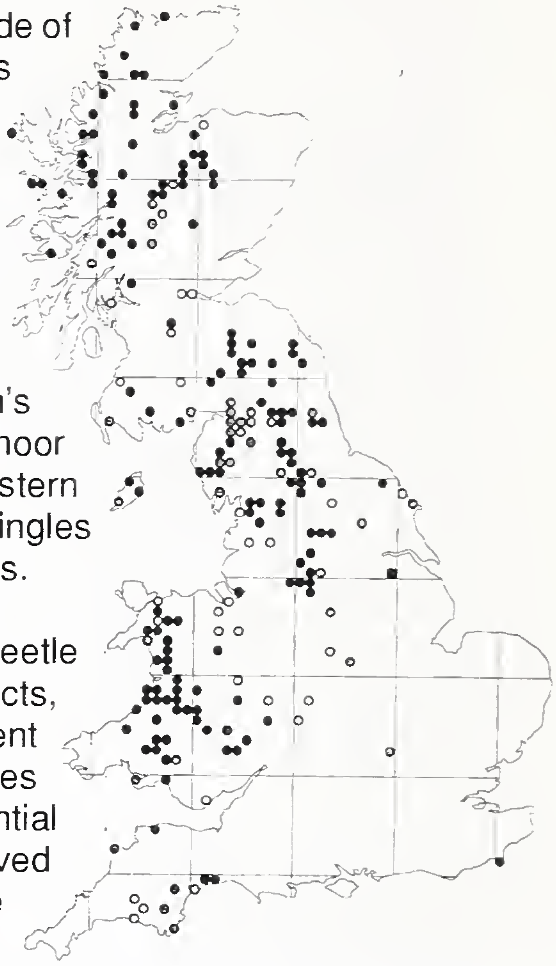
Alan Lazenby added the small rove beetle *Astenus procerus* (RDBK) from the agricultural show at Woodhall Spa on 28th May - it was determined by Eric Smith from South Yorkshire. This appears to be a rare species of sandy soils, usually by the coast, and there are very few recent records in Britain, all in southern counties.

Roughton Moor Wood near Woodhall Spa turned up some nice dead wood species when Allan and Annette Binding surveyed the site for the Trust. On 31st May *Caenoscelis subdeplanata* turned up; a small dead wood beetle that has not been seen in the county before. They also found a dead wood weevil *Trachodes hispidus* (NB) on 17th and 26th July, otherwise only known from Fulsby Wood in 1996. They also found *Rhizophagus depressus* on two occasions, otherwise only known from the Limewoods in 1971, the longhorn *Asemum striatum*, with two other records, Bourne South fen last year and Linwood Warren 1948 as well as the metallic blue 'pot' beetle *Cryptocephalus parvulus* (NB) on 17th July, a leaf-feeding species from birch known otherwise from the Linwood area and an old record for Scotter.

Annette and I together found the small red and black dead wood beetle *Tritoma bipustulata* (NA), new to Lincs from Owlet Plantation Woodland Trust Reserve on 24th May. This is very scarce and declining species and Owlet plantation holds distinct promise for other interesting discoveries in the future. We also both found there *Magdalis cerasi* (NB), a weevil that bores into the small branches of various shrubs of the rose family. There are only 5 other records in the county and I found it also at Carmer Wood near Laughton on

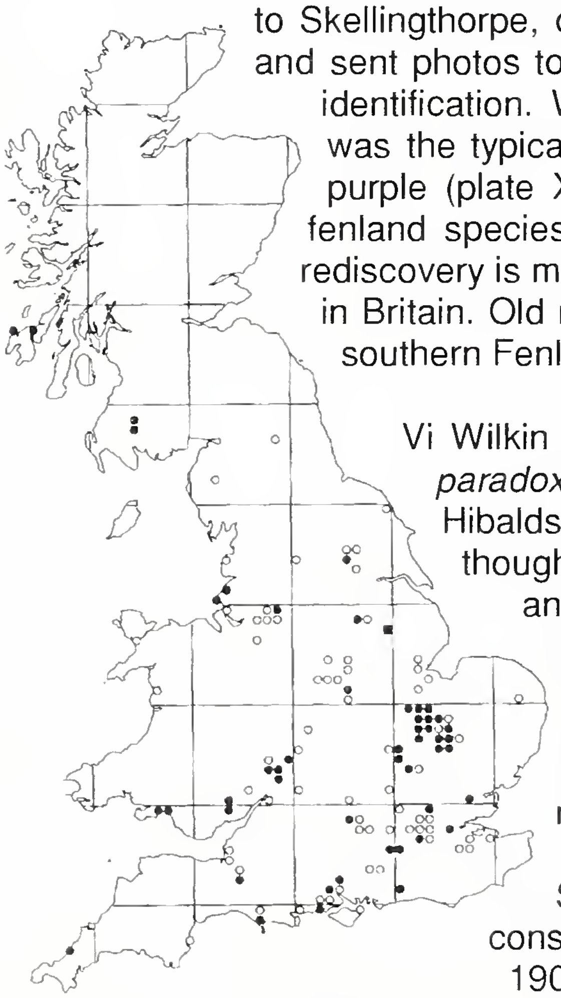
24th May, as well as the flea beetle *Chaetocnema picipes* , which is new to the county and the 'sap' beetle *Epuraea florea* with only one other record. The former species results from a taxonomic split of the very common *Chaetocnema concinna*, though seems to be much scarcer than that species. Also at Owlet Plantation Annette found the small longhorn *Grammoptera ruficornis/holomelina*. Depending on the literature source, this is either an all black, large variety of the common *G. ruficornis*, or a separate species which has so far never been seen outside of Britain. There is only one other record, from Chambers Wood in 1993.

Other species I discovered new to the county in 2000 include the reddish weevil *Trichosirocalus thalhammeri* from Rimac on 14th May, a small species that feeds on sea plantain. The tiny rove beetle *Gnypeta rubrior* turned up at Crowland Wildlife Group's pond on the old Lido area. My most remarkable addition, however, is of Britain's smallest click beetle *Zorochrus minimus*, swept at Twigmoor on 22nd May. This is a very upland, northern and western element in the British fauna, commonly found on river shingles beside upland rivers and among stones on mountain tops.


Zorochros minimus after Mendel & Clarke; 1996.

A number of rediscoveries deserve comment. The musk beetle *Aromia moschata* (NB) (plate 11), one of our largest insects, was known from 11 records in the county, the most recent being in 1953 at Skellingthorpe. I postulated that the species appeared to be extinct in Lincolnshire in my presidential address in 1995 (Key, 1996) and am pleased to be proved wrong. David Knight spotted the species near to the Fossdyke Canal at Boultham, very close to Skellingthorpe, on 29th and 31st July and sent photos to Annette Binding for identification. While one specimen was the typical bronze green colour, the other was a glorious lilac purple (plate X), a most unusual colour variety. This is a typical fenland species and breeds in the wood of pollarded willows. Its rediscovery is most welcome as the species is thought to be declining in Britain. Old records are concentrated around Lincoln, and in the southern Fenlands, where it was last seen in 1941 at Donington.

Vi Wilkin found one of our most peculiar beetles, *Metoecus paradoxus*, an inquiline species in wasps nest, in her house at Hibaldstow in October. This is the first record since 1885, though the species is likely to overlooked, given its habitat, and is only seen during the brief period when it leaves the nest. Dr Archer, our bee and wasp recorder, regards the species as not uncommon in Yorkshire, where he has studied the social wasps in detail, but it is infrequently met with by beetle recorders. Other rediscoveries include the lesser bloody-nosed beetle *Timarcha goetingensis* from Linwood Warren by Colin Smith on 23rd April. This is the first time this quite conspicuous species has been seen in the county since 1900, when it was last seen at Linwood Warren! Where


Musk beetle after Twinn & Harding 1999

do such species hide in the intervening years? John Lamin found the weevil *Tanymecus palliatus* (NB), a species resembling a giant pea and bean weevil, at Morton Fen in June. This is only the third Lincs record and the first since 1907, having been seen previously at Cadney & Humberston.

Metoecus paradoxus an inhabitant of wasp nests last seen in Lincs in 1885. photo RS Key

A number of species with very few other records also turned up in the year. Annette Binding found the reddish orange dead wood species *Hylecoetus dermestoides* (NB) at Kirkby Moor on 23rd April, only a year after she added it to the county fauna from Crowle Moors. She also found the tiny bark beetle *Xyleborus saxeseni* there on the same day, otherwise known from Grimsthorpe Park in 1983 and a specimen that landed on my car roof at Crowle in 1984. Annette's other significant find was of the 'smut' beetle *Phalacrus caricis* from Baston Fen on 19th July, the only other recent record being from the banks of the River Torne near Belton in 1983, although there are three other very old records. It is a typical fenland species.

Hylecoetus dermestoides - two new sites in two years - is it spreading? photo RS Key

Colin Smith made the 2nd Lincolnshire record of the scavenger beetle *Grammostethus marginatus* (NB) at Market Rasen on 7th May. This species is most frequent in rabbit burrows and the only other record is from Risby Warren in 1994. He also found the plant-eating ground beetle *Anisodactylus binotatus* at Market Rasen on 2nd September; there are two recent records from Crowle Moors and an old one from Moortown and on 21st September he found the rove beetle Oxypoda exoleta (NB) at Glentham, the only other records being from Stallingborough in 1913 and Skegness in 1997. He also found the tiny rove beetle *Atheta pertyi* in the dunes at Mogg's Eye on 18th September, only the 4th record. Both small roves were identified by Alex Williams of Kent.

My own contributions include the tiny pselaphid beetle *Rybaxis longicornis*, from Spalding railway borrow pits on 8th June, nationally quite a common species but with only a single previous county record; the ground beetle *Harpalus smaragdinus* (NB) reconfirmed from Risby Warren on 23rd May and last seen there at its only Lincs site in 1987 at its furthest north site in Britain; the 'tumbling flower beetles *Anaspis garneysi* from the Bracken Beds at Grimsthorpe Park on 19th July (otherwise only at Hoplands Wood in 1994) and *Anaspis thoracica* (NA) from the same site on the same day, known otherwise only in the Limewoods; the ground beetle Amara lucida (NB) from Rimac on 14th May, otherwise only single specimens from Donna Nook in 1996 and Moortown in 1907; and the tiny rove beetle *Oligota pumilio* (identified by Alex Williams) from a suction sample at Crowland Lido on 20th August, otherwise only known from Mareham on the Hill in 1996.

Other interesting records in the year are four more sites for the click beetle *Cardiophorus asellus* (NB) from various sites in the Coversands in May; Manton Common South 22nd, Risby Warren 23rd, Owlet Plantation & Carmer Wood both 24th. This is a scarce species, with Lincolnshire having furthest north localities, and the only other records are from Risby and Twigmoor in the mid 1980s. Perhaps the damp spring favoured the species. An additional site for the hairy flea beetle *Epitrix pubescens* on bittersweet turned up at the Spalding railway borrow pits on 8th June, a species that was new to Lincs in 1998 and we now have three sites for.

Leeds University's PhD study of *Cryptocephalus coryli* (RDB1)continues at Kirkby Moor, where the species was observed repeatedly by Annette & Allan Binding and Ross Piper, and two experimental introductions of larvae of this species were made to test our knowledge of the species' ecology, at Whisby Pits and open space in Laughton Forest in October. The establishments attracted considerable media attention, with appearances on national radio and TV and in local and national newspapers by Annette, Ross and myself.

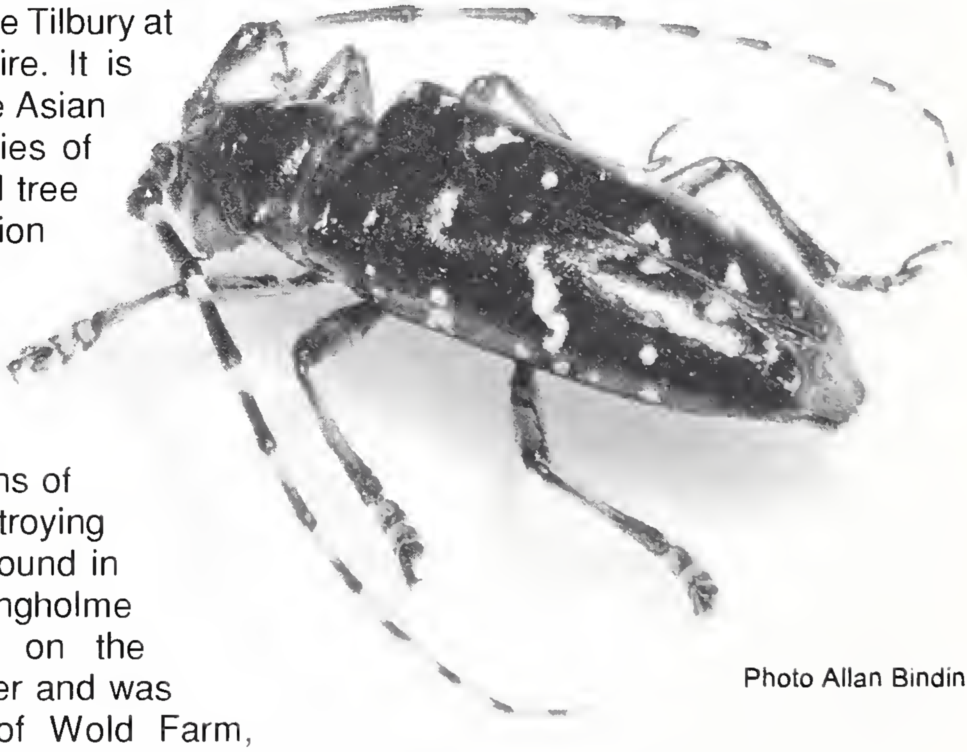
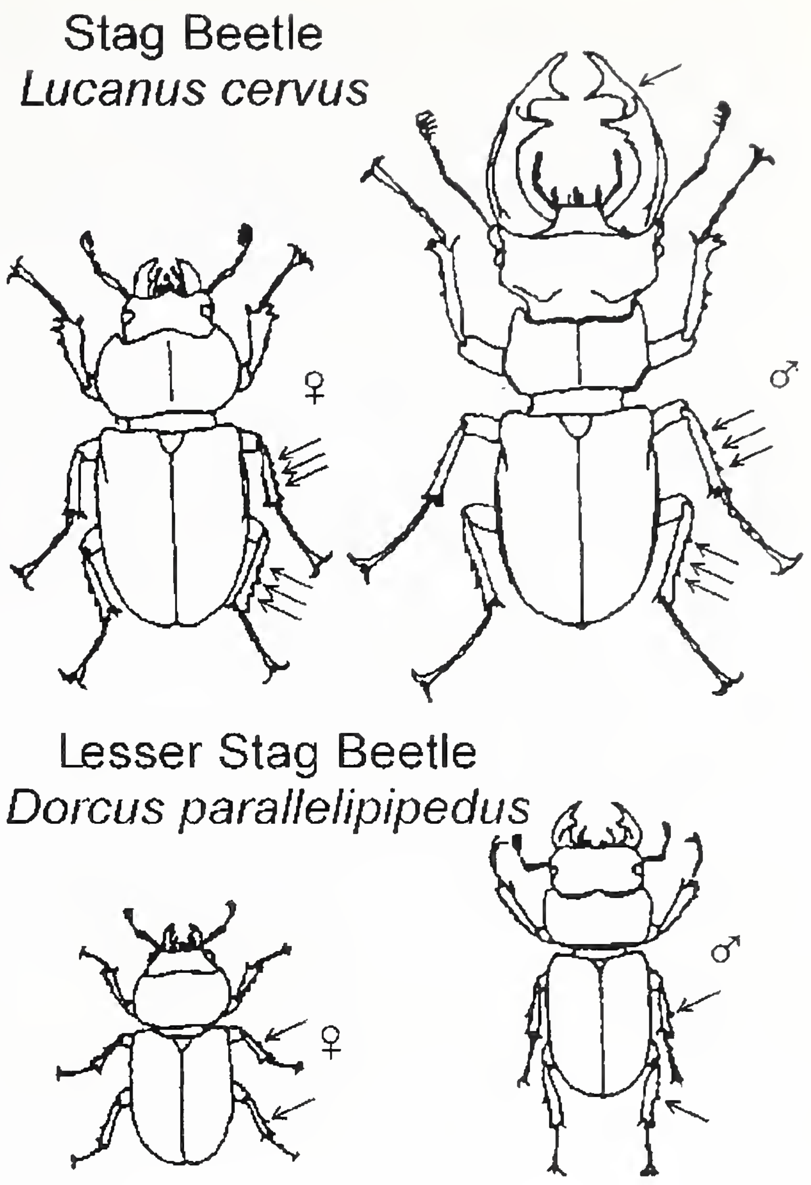


Photo Allan Binding

A very unwelcome new county record has just been identified by Christine Tilbury at Forest Research in Hampshire. It is *Anoplophora glabripennis* the Asian Longhorn a major pest species of many species of broadleaved tree which the Forestry Commission are desperately trying to keep out of Britain and are keeping watch at ports of importation. This species has recently got into the US where it is causing millions of dollars of damage and destroying many valued trees. It was found in 1997 by a lorry driver at a Killingholme or Immingham wood yard on the Humber Bank on some timber and was given to Mr K Armstrong of Wold Farm, Nettleton. He tried to release the beetle on his property but (fortunately!) it would not fly away. He was advised to contact Annette Binding who collected it and kept it alive for about two weeks in captivity stripping the bark off the branches given to it. Given its exotic origin, it was that ought that it would be difficult to get an identification, but Annette spotted the recent publicity about the risk of importing this pest species and sent the specimen to Forest Research for identification.

Finally, another twist in the saga of the mystery of Lincolnshire's stag beetles. Annette Faulkner found a jam-jar with the remains of a very badly crushed beetle in her attic. She had labelled it "water beetle, Spalding 3/5/95, but cannot recollect the find at all. The contents turned out to be the thorax and abdomen of a female stag beetle *Lucanus cervus* (NB), mixed with the foreparts of a dumbledor beetle *Geotrupes* sp. Thus we have another enigmatic record of the stag beetle in the county, but this time backed up by a specimen. Annette can only think that the words "water beetle" must refer to the specimen turning up in water, perhaps in a water but or garden pond. Any additional records of the true stag beetle would be welcome, and I am happy to come over if a live one is temporarily imprisoned. It might be that we have the northernmost population of this species in Britain, which is listed on the species annexe European Union's Habitats and Species Directive and on the UK Biodiversity Action Plan.



Anyone seen the stag beetle?

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FLIES - Andy Godfrey & Jill Mears

Various invertebrates were sampled as part of a study on the impacts of grazing on the Wash and Frampton Marsh carried out by English Nature and the Diptera passed on to the author. The most interesting species recorded was the Red Data Book 3 tabanid fly *Haematopota bigoti.* This rare species is restricted to salt marshes and similar habitats throughout Britain with only old records for the Wash according to Drake (1991). The larvae of this species are probably predators in damp saline soil This species was found both on Frampton Marsh and on the Wash (at Vinegar Middle). Two other nationally Scarce species were recorded, namely the dolichopodid *Dolichopus strigipes* and the picture-winged fly *Melieria picta. Dolichopus strigipes* is mainly known from salt marshes where it is widely distributed from Devon to Norfolk. The biology of this species is unknown; the larvae may be semi-aquatic predators. The distribution of *Melieria picta* shows a strong southeastern bias with records extending from the Isle of Wight to Yorkshire. The typical habitat is saltmarsh and brackish ditches and fleets in coastal levels. The larval stages are unknown and are thought to possibly develop in decaying vegetable matter. A number of other infrequent coastal species were taken including the hoverfly *Cheilosia griseiventris* and the fit fly *Thaumatomyia hallandica*. The impact of grazing pressure on all these species has yet to be assessed.

Alan and Annette Binding and Jill Mears also submitted batches of material for identification The most noteworthy species amongst these was *Solva marginata* (Xylomyiidae) from Rauceby Warren. This is a Vulnerable (Red Data Book 2) species most characteristic of lowland ancient woodlands, though well recorded throughout the late 1980s and 1990s from many new sites. The larvae have been found mostly in dead poplar but also in dead oak, ash sycamore and walnut (Drake 1991). The specimen recorded is a male taken from Rauceby Warren on 11 th June 1996. This species favours open habitats such as parkland, heathland or fen where there has been a continuity of old or diseased trees. Full marks go to Annette for finding this species. A number of other infrequent species were present in the batches including the brilliant glossy acalyptrate *Physiphora alceae* (see Colyer and Hammond 11968. Plate 219, figure 4 for an illustration of this species under its old name *Physiphora demandata)* which was recorded from Moor Farm. The large hairy tachinid *Servillia ursina* (also illustrated in Colyer and Hammond) was taken from Chambers Wood. This is an infrequent early spring woodland species that is easily missed because its short flight season is over by the time the first leaves on trees appear in spring.

Baston Fen proved to be an excellent site with a good number of wetland species being found there. The species included the soldierflies *Praomyia leachii* and *Oplodontha viridula*, the latter being a beautiful emerald green colour (plate 12). The picture-wing fly *Merieria cana* was found together with the hoverfly *Platycheirus fulviventris*.

The picture-wing *Trupanea stellata* was recorded for Belton Park in July by Dr R Key. This fly is associated with the southern and eastern counties of England (Clemons, 1996). Due to the pale grey colour of the fly and the white legs it is likely to be an overlooked species, extremely camouflaged in the white sweep nets used.

The central Lincolnshire woods around Bardney, including many lime woods, have produced a number of good records for the county (Recorders A & AE Binding). *Chrysotoxum bicinctum* was recorded for Southrey Wood. This species is often seen basking on grassy slopes, not necessarily in a woodland situation. The second county record of *Leucozona laternaria* was for Great Scrubbs Wood, although nationally the species status is “common”. *Cheilosia impressa,* a species that likes alder carr and wet woodland, was recorded for Legsby Wood and Chambers Forest. Finally, *Cheilosia pubera* seems to have established a major stronghold in these central woods being seen again at College Wood. It is the classic spring hoverfly species in the county and is very common where it is found, brassy little flies darting around in the sunlight, often around the celandines.

Criorhina floccosa was recorded by Mr & Mrs A Binding at Kirkby Moor in June 2000. This species was last seen in the county in 1994 at Moor Farm. It is a classic spring species, this particular specimen being rather old and worn, at the end of the flight period.

Work is currently in hand on sorting and identifying Diptera from the Lincolnshire lime woods and a report should be available next year.

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BUTTERFLIES - Allan Binding

It is not every year that we can report a new species of butterfly to the county. On the 22nd September Roger Parsons noticed a little blue butterfly flying around his garden at Wildmore Fen. He decided to catch the butterfly as he was having difficulty in identifying it. It fitted the description of a female long-tailed blue *Lampides boeticus* and was in very good condition with no damage to its wing scales or tails. The butterfly must have just emerged, possibly from Roger's garden. It is impossible to know how a long-tailed blue managed to get to and breed at the Wildmore Fen garden; it could have either migrated or have been imported as larvae inside fresh produce from the Mediterranean area.

Roger Parsons telephoned me regarding his find and to tell me that the butterfly would be in transit to me that day. The next day I took the butterfly to Roger Key to have its photograph taken (plate 13), which has been reproduced in the journal Atropos. The specimen was retained for the LNU county collection.

Long-tailed Blue butterflies are found in the Mediterranean region and in Africa. Their larval food plants are legumes and, in large numbers, they can decimate pea and broad bean crops, which can make them a serious agricultural pest. The larvae can be found throughout the year in the Mediterranean and adults are on the wing from May to September. The species is an occasional migrant to Southern Britain.

The late spring and early summer weather was very poor for butterflies. Most early species of butterflies took a battering in the adverse weather conditions. Early spring fine weather saw the emergence from hibernation of many commas; I recorded 13 at College Wood on the 19th March. Brimstone and peacock were common but very few holly blues were seen in Lincolnshire this year. A red admiral was seen at Whisby Nature Park on the 12th March which could have over-wintered rather than migrated.

The late spring butterflies had to struggle with weather conditions that continued to deteriorate. Green hairstreak, grizzled skipper and dingy skipper were seen in their usual locations but it remains to be seen if they will be down in their numbers in 2001. Duke of Burgundy were in low numbers in their two South Lincolnshire locations but again were battling against the poor weather conditions. Small coppers and small heaths have not been so common in recent years and this year their decline continued.

After all this bad weather it was somewhat of a surprise to find that the rest of the summer and autumn was so good for many butterfly species. By late June clouded yellow were being seen throughout Lincolnshire gradually increasing in numbers through July and August. Quite a few of the *'helice'* form were seen amongst them. Painted lady were not as common as red admiral this year but were widespread. Marbled white were seen again in their usual South Lincolnshire location. The small colony which were released by an unknown person a few years ago at Chambers Forest Complex did very well in 2000 with over 20 butterflies being seen by many people who visited the woodland and Little Scrubbs Meadow LWT Reserve. Most of the other 'browns' had a good year with speckled woods continuing to spread in their range both in Lincolnshire and the East Midlands. Butterflies were seen on the wing until December when Steve Green and Sara Cook saw a painted lady at Southrey Wood on the 3rd December.

MOTHS - Phil Porter

Migrants

The notable event of the year was the extensive influx of humming bird hawk moths which appeared from 19th June to 15th October from Woolsthorpe to Barton and the 25 separate records received obviously caused a lot of satisfaction for the observers who were often not moth people at all. The fact that a number of migrants were being found spread quickly to the Wildnews bulletin and this probably increased the number of occurrences that came to our attention. Convolvulus hawks were fewer, with 13 records from 2nd July to 2nd October and again one or two records were gleaned from the bulletin. Other hawks were two death's heads, one a larva from Morkery Wood per Ken Skelton on 28th August and the other an adult found dead in a beehive by Alf McGowan at Ashby cum Fenby on 7th October. Also an adult bedstraw hawk at Muckton by G. Wright.

The rush veneer appeared widely from 20th June to 2nd October. The gem occurred three times on consecutive nights at Old Bolingbroke, Skidbrooke and Muckton from 29th September to 1st October and the vestal performed in a similar way with singles at Caistor, Old Bolingbroke and Roughton from 16th to 27th August. The Kent black arches was seen as usual at Gibraltar Point on 2nd July.

Noctuids were as follows; silver Y, 26th May to 1st October but in very small numbers, dark sword-grass 9th June to 11th November, pearly underwing 26th September to 15th October, bordered straw 20th June to 9th September.

Micro-moths

There were a number of new county records as follows;
Lampronia flavimitrella (Incurvariidae) Grimsthorpe Park 29th May John Lamin
Coleophora taeniipennella (Coleophoridae) Southrey Wood 14th June Colin Smith
Schiffermuelleria similella (Oecophoridae) Osgodby Moor 20th June Colin Smith
Anacampsis blattariella (Gelechidae) Tealby Road 9th August Colin Smith
Batrachedra praeangusta (Momphidae) Osgodby Moor 5th September Colin Smith
Mompha locupletella (Momphidae) Callan's Lane Wood 19th June John Lamin
Archips betulana (Tortricidae) Tealby Road 9th August Colin Smith
Apotomis lineana (Tortricidae) College Wood 11th August Colin Smith and Rex Johnson

The following constituted first records since Mason at the turn of the last century;
Leucoptera spartifoliella (Lyonetiidae) Willingham Forest 27th June Colin Smith
Pseudosciaphila branderina (Tortricidae) Callan's Lane Wood 19th June John Lamin
Pammene populana (Tortricidae) North Hykeham 6th August Colin Smith

Finally, the following were vice-county firsts: VC53: *Elachista albifrontella* Grimsthorpe Park 7th June John Lamin, *Borkhausenia fuscescens* Aslackby 28th July Rex Johnson, *Zieraphera diniana* Aslackby 28th July Rex Johnson. VC54: *Dichomeris marginella* Gibraltar Point July Kevin Wilson.

Macro-moths

430 species were recorded, 2 less than last year and most recorders remarked on an average year at best. Some indicated that numbers were well down because of the wet cool summer.

The small colony of red-tipped clearwing continued at Spalding, recorded on 8th June. Among the geometers, there were the oblique carpet at Far Ings on 12th September (very few records over the last 12 years); the maple pug at Market Rasen on 6th August (only two records in the last 16 years); the scarce pug at its county headquarters Gibraltar Point on 15th June; the golden-rod pug again at Market Rasen on 8th August (infrequently recorded); the small brindled beauty at Roughton on 8th March (only in the last three years since the 1960's); the Brussels lace at Market Rasen on 31st July (only three records since 1986 and the first away from Chamber's Plantation) and the yellow belle at Gibraltar Point on 25th May (its most reliable locality).

The maple prominent appeared at Grimsthorpe Park on 16th June and 29th July and seems to be more established in the south. The brown-tail, not seen for three years previously, was recorded at Skidbrooke and Dalby on 28th and 30th July respectively.

Finally the noctuids were represented by the square-spotted clay at Gibraltar Point and Grimsthorpe Park on 11th and 18th August respectively (only a couple of records in the last decade); the bordered gothic at Bottesford on 19th July (always irregular and not seen for four years recently); the grey chi at Far Ings and Market Rasen on 3rd and 30th September respectively (only recorded in three years since 1986); the butterbur at Dalby on 20th October (two records in the last 12 years) and finally one of the most important Lincolnshire rarities, the marsh moth at Saltfleetby on 12th June.

PARASITIC WASPS - Roger Key

While we don't have a recorder for parasitic wasps, an interesting specimen was brought to me at work at English Nature by my colleague Martin Drake from Market Deeping. On 14th July he found an unusual wasp in his neighbour's garden and species turned out to be a female *Gasteruption jaculator* (plate 14), a species of a genus in a family of its own Gasteruptiidae, characterised by the 'abdomen' (more correctly gaster) situated very high on the 'thorax' (more correctly the propodaeum as the 'waist' in the Hymenoptera is between two abdominal segments, not between the thorax and abdomen). When disturbed, the wasp flicks its abdomen into a vertical position presumably as a startle reaction. There are no systematic records of Parasitica from Lincolnshire, but the monograph on the British species (Crosskey; 1951) does not include Lincolnshire in the list of counties from which it is recorded, recording it north to Staffordshire and Leicestershire (though I have myself found it in Derbyshire). Gasteruptiids are cleptoparasites in the food stored in the burrows of solitary bees (Gauld & Bolton; 1988) and the adults are most often seen on flowers.

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WASPS, ANTS and BEES - Michael Archer

Three new species have been added during 2000 (although one species *Sphecodes niger* was actually recorded during 1999). The new species are: *Lasioglossum fulvicorne* (Kirby), a mining bee associated with open, dry calcareous habitats, at Welton-le-Woid on 19th June 2000; *Sphecodes niger* von Hagens, a cleptoparasite, at Rauceby Warren on 11th September 1999; and *Sphecodes reticulatus* Thomson, another cleptoparasite, at

Messingham Sand Quarry on 13th June. All three species were collected by the author and *S. niger* was first identified by Mike Edwards of West Sussex.

Other important records during 2000 were the hornet, *Vespa crabro* L. recorded by J. Flynn, November 2000, at Grimsby and *Dolichovespula media* (Retzius) collected by P. Porter, 29 August 2000, at Lincoln.

MOLLUSCS - John Redshaw

Chris du Feu has continued recording slug distribution and has produced many new 10km square records. Of particular interest was the discovery of *Arion flagellus* at Walesby on 19th November. This is a new record for the county of a species whose main area of distribution is in Devon and mid Wales. There are no previous records for East Anglia, and only one isolated record for the East Midlands, in east Leicestershire, (Kerney, 1999). Mr. du Feu has also produced a new vice county record with the discovery of *Lehmannia valentiana* at Baytree Nurseries near Spalding, where *Boettgerilla pallens* was also found. Recording of *Arion distinctus*, a segregate species of the *Arion hortensis* group, has shown it to have a wide distribution in the county, indeed it is probably more common than *A. hortensis* s.s. Two other slug species which were previously under-recorded, and which now appear to have a more general distribution are *Milax gagates* and *Deroceras panormitanum*, (the latter formerly known as *D. caruanae*). Mr. A S. Lazenby has provided records and a voucher colour slide (plate 15) of *Boettgerilla pallens*, found at Blankney Fen (TF1262) in 1993 and 1998 thus providing another new vice county record.

In August a concerted attempt was made to locate *Valvata macrostoma* at its former location at Baston Fen NR. It has not been found since 1985. All former dyke lengths from which it was known were searched, but no specimens were found. It is likely that this species is now extinct in the county, and indeed may be extinct at all its previously known sites north of Peterborough. *Valvata macrostoma* is limited to only a few 10km squares in the whole of the country (Kerney, 1999). The search also revealed that another, once common, species in the genus, *Valvata piscinalis* is extremely rare at Baston Fen.

In September the limestone walls at Aunby verge and Castledyke Wood (TF 01), in the very south west corner of the county were searched, continuing a regular monitoring programme, for the presence of *Pyramidula rupestris, Helicigona lapicida* and *Balea perversa* for which this is the only known location in the county. All three species were found in good numbers and appear to be in no immediate danger. Also in September, the author lead a Wildlife Watch Group on a mollusc hunt at Riseholme College. Sixteen terrestrial and five aquatic species were recorded, less than the number found at a similar meeting there in July 1987. Of particular interest for the children were the presence of the large slugs *Limax maximus* and *Lehmannia marginata*.

Colin Smith has ranged widely throughout the north of the county. He has produced several new 10km square records particularly from the Market Rasen area, of interest being the infilling in the known distribution of *Candidula intersecta.*

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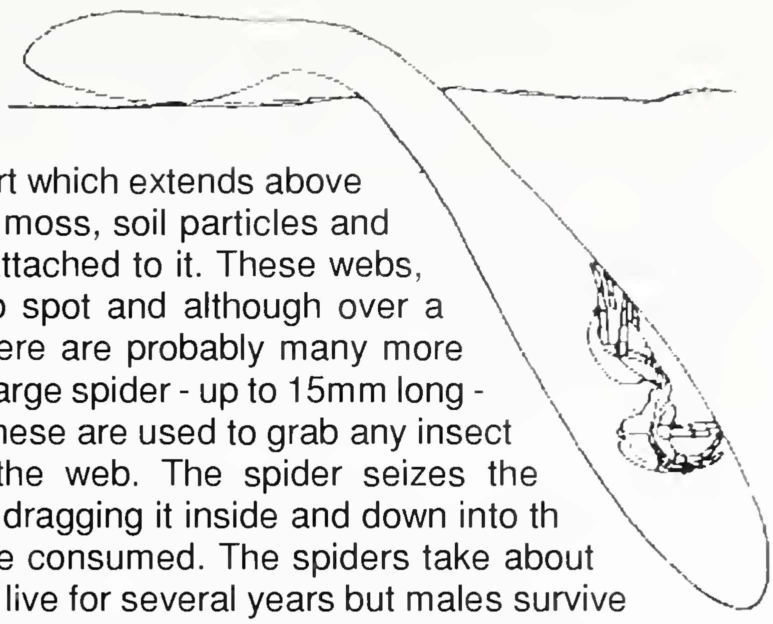
SPIDERS - Annette Binding

By far the most exciting find in 2000 was the discovery of a large and thriving colony of the purse-web spider *Atypus affinis* (plate 16) at Kirkby Moor. The spiders live in tubular webs



most of which - up to twenty inches - is underground. Above ground this tubular web forms a sock-shape which is anchored at one end. The whole web is made from thick white silk and the part which extends above ground is well camouflaged with bits of moss, soil particles and the remains of previous insect meals attached to it. These webs, often flattened, can be very difficult to spot and although over a hundred were counted on 26th June there are probably many more spread over the site. *Atypus affinis* is a large spider - up to 15mm long - armed with a pair of very large fangs. These are used to grab any insect which walks over the aerial part of the web. The spider seizes the unfortunate insect from within the web, dragging it inside and down into the underground chamber where it will be consumed. The spiders take about four years to reach adulthood. Females live for several years but males survive only a few months after mating.

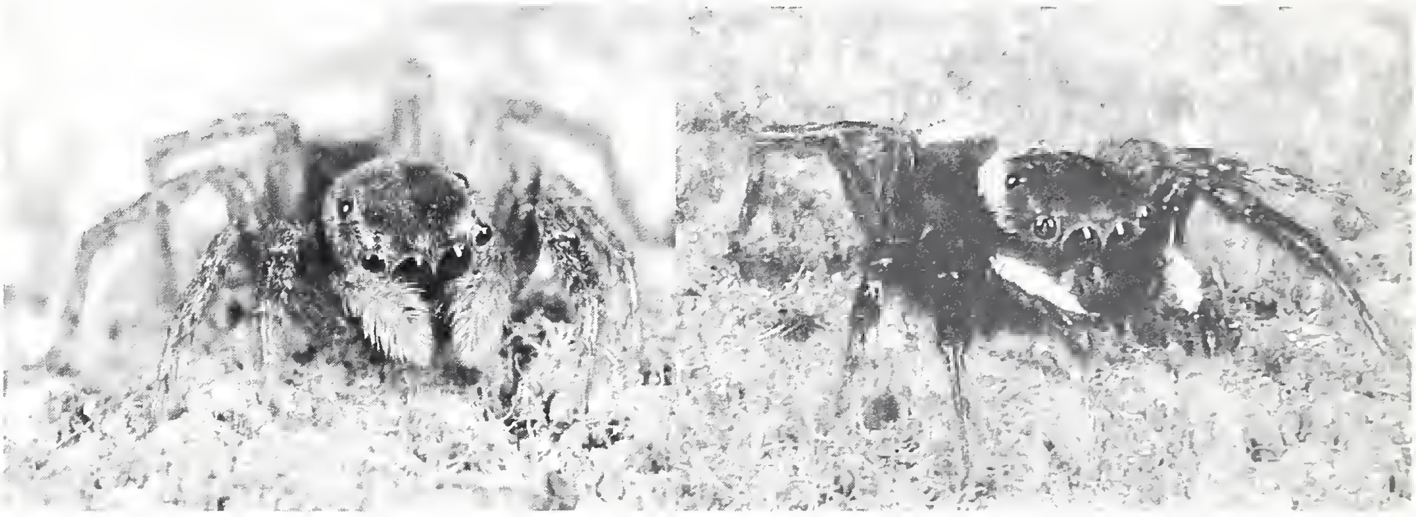
Although there were no other new county records, surveys of Roughton Moor Wood and Kirkby Moor produced some interesting records. At Roughton Moor a male *Labulla thoracica* was recorded on 17th July Wood. Although listed as common there were only four previous county records for this species. Similarly a male of the tiny brown jumping spider *Neon reticulatus* was found also on 17th July, again with only four previous records. There was a very good population of the large brown spider *Coelotes atropos*. A male was found on 17th July and on a subsequent visit to the reserve on 26th July the tube webs of over twenty-five females were found, many of which contained the pale egg sacs. The eggs are laid in early summer and after hatching the young are cared for by the female who feeds them by regurgitation. When she dies in the autumn the spiderlings eat her before dispersing to make their own webs.

A number of interesting species were also found at Kirkby Moor. A small mottled brownish spider found on heather on 23rd April was identified as a male *Episinus angulatus*. In this species the abdomen is broadened towards the rear giving it a triangular appearance and the third pair of legs are much shorter than the other three pairs. The spider is listed as local nationally but this was only the second Lincolnshire record. It was first recorded in 1995 by Amanda Borrows, also at Kirkby Moor, so seems to have a very limited distribution within the county. Four male *Drassodes cupreus* were caught in pitfall traps on 31st May. This nocturnal heathland species is found at only six other sites in the county. We also recorded two male *Ozyptila atomaria* which have been found at only five sites in Lincs. These small pale-coloured crab spiders live mostly at ground level in mosses and leaf-litter and are mature in spring and early summer. A spider found by Allan Binding on birch on 1st May was identified as a female *Atea triguttata*. Found mostly in southern Britain, there were only two earlier records for Lincolnshire, the last one being at Holywell in June 1954.

One of the small 'mesh-webbed' spiders, *Dictyna latens*, was found by Allan Binding at Moor Farm on 12th May. A species found mainly on heather and gorse, it had previously been recorded at only two sites in the county, Irby in 1900 and then, after an absence of over ninety years, it turned up at Kirkby Moor Reserve on 25th June 1996 when it was recorded by Alex Williams from Kent.

The daddy-long-legs spider *Pholcus phalangiodes* gained a new site in 2000 when Dr R.S. Key recorded it in the toilet (a usual habitat) of a café in Woodhall Spa on 6th July. There were more records of crab spiders and jumping spiders than in 1999, including the more uncommon crab spider *Xysticus ulmi,* recorded at Chambers Wood by myself on 9th June and the jumping spider *Sitticus pubescens* recorded at Owlet Plantation, Woodhall Spa and Washingborough.

Finally, a number of exotic spiders have been recorded in the county in the year. Roger Key found a thriving population of an alien species of jumping spider, which remains to be identified, at the 'Tropical Forest' at Pinchbeck. Larger numbers of spider were found on the vegetation in the main greenhouse, venturing into the shop and being quite common amongst the plastic models of invertebrates on sale there. Staff were familiar with the spiders, but they were not a deliberate introduction for biological control. The male and female are quite different, the male having black, red and white markings, the female being mottled brown, the spider resembling a very large *Euophrys frontalis.* Two other species were reported in the Lincolnshire Echo on 18th October. A black widow spider was found in Lincoln in August and a female red-rumped tarantula was discovered wandering in the grounds of Alstom in the Waterside South area of the city on 17th October. Both spiders were collected by the RSPCA and taken to an exotic animal specialist to be cared for.



Jumping spider from 'Tropical Forest' at Pinchbeck -female & male (right) photo Roger Key

BATS - Annette Faulkner

As we get better at using bat detectors and our field craft improves so we continue to make more discoveries about Lincolnshire's bats. As usual, the year started off with surveys of the two hibernacula towards the north of the county - a survey that is now in its twelfth year. This is co-ordinated by new LNU member Garry Steele, who has the appropriate English Nature licence. In the January survey a total of 88 bats were counted and in February, 62 with 4 species of bat being found.

In January we were asked to do what appeared to be a routine survey of a stately home in the south west of the county, on a part of the building that was scheduled for renovation. There have been a number of other surveys here in the past, and nothing out of the ordinary has shown up. However this turned out to be different. The site was a pair of service tunnels, one on top of the other, that utilised a hillside to run coal trucks into the top of the house. It was in a poor state of repair, with part of the roof missing, and a number of settlement cracks in the walls. These turned out to be being used by hibernating bats - brown long-eared, pipistrelle - and a barbastelle - only the third county record. Subsequently English Nature and English Heritage have been working together to incorporate a hibernaculum into the restoration, and we have made several more visits to monitor this site.

In February Garry Steele was carrying out a bat survey on some farm buildings scheduled for demolition, in the south of the county, when he discovered a bat he couldn't identify hibernating in a cavity wall, with only the back of its head visible. After several visits with various colleagues, none of whom were able identify the animal, the bat eventually turned itself round - and turned out to be another barbastelle!

Both sites are near woodland, where barbastelles are usually found; research has shown that they do not travel far from their summer roost sites, so it is likely that these animals will be a part of two separate woodland colonies, since the woods are about twenty kilometres apart.

Our discovery of a whiskered bat at Spalding was the beginning of several other discoveries - and we can now say that whiskered/Brandt's bats are most definitely found in the Fens, with four found feeding at the LWT reserve at Gosberton in May, two at a wildlife-friendly farm at Deeping St Nicholas - a generally rather un-wildlife-friendly place - and roosts at Langtoft and Deeping St James churches. Roosts have also been found at Martin Dales near Tattershall and, more predictably, at Hainton. They are so like pipistrelles in size, and sound so like Daubenton's on a bat detector, that it's only when all characteristics are put together that they can be separated out and they are likely - as I've long suspected - to be considerably under-recorded.

This is not the case with noctules, which appear to be in massive decline. Records of these bats in double figures are now a rarity and they are more usually recorded in ones and twos. The exception to this is on a very wildlife-friendly farm at Mavis Enderby, where 30 or more have been counted. Otherwise, the largest number recorded together in 2000 was 9 over Scawby ponds in July, but they appear to have been lost from the Tattershall area: none have been recorded in the last two years, whereas previously we could always reckon to record 4 or 5. The reason would seem to be the increasing loss of pasture - I understand there is now only c6% left in the county - and the continuing loss of tree holes to roost in. The knock-on effect of man's folly is never ending, in the first case from BSE, and in the second from the threat of litigation over supposedly dangerous trees.

Some interesting records are emerging regarding the distribution of the two species of pipistrelle. In my last report I made the assertion that the two species seem to be fairly evenly distributed in the county - but this seems not to be the case, and *Pipistrellus pipistrellus,* the one labelled 'common pipistrelle' really does seem to be the commoner of the two species, and is much more likely to be encountered.

The Bat Group co-ordinates the National Bat Colony Survey in the county, with between 40 and 60 people taking part each year, counting their bats in June. The records are then entered into Lincolnshire data before being sent off to the organisers in Peterborough. We are also continuing with our own questionnaire that sets out to update roost information every five years. In 2000 35 questionnaires were sent out, with 18 returned - c50%. Of these, ten roosts were still in occupation, six were not and two people didn't know whether the bats were there or not. What is still very evident is the level of confusion over the law, with 'unofficial' repairs still be undertaken without consultation with English Nature, with varying degrees of success, even when people really like having the bats. How to get this message across is an ongoing concern.

Three of us have also been taking part in the National Bat Monitoring Programme, run by the Bat Conservation Trust. This is much more tightly controlled and 'scientific' than anything else we take part in, but is producing a few surprises, such as pipistrelles flying across potato fields, with not a tree in site, when they are supposed to hate open spaces!

The species being surveyed are Daubenton's - so far proving our contention that they are everywhere along larger Fenland watercourses, pipistrelle - and noctule - yet to be found in any of the random 1km squares we have been asked to survey in the three years the programme has been in operation. A new survey, for brown long-eareds, is due to start in 2001, and a national atlas is in preparation, for which Lincolnshire data has been submitted.

Recording the one bat you see over your garden may not seem important, but one year it may not come back, and its place may not be taken by another (better still, it might be joined by another!). In our own garden we started with two seen regularly 25 years ago, then it went down to one and now we only see one very rarely. Is this evidence of decline - or is there another reason? Only records kept over many years can provide the answers

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TRANSACTIONS OF THE LINCOLNSHIRE NATURALISTS' UNION

Officers of the Union in 2000

President	Irene Weston	**President Elect**	Annette Faulkner
General Secretary	Phil Porter	**Treasurer**	Dave Bromwich
Auditor	John Levine	**Membership Secretary**	Allan Binding
Publicity Secretary	vacant	**Programme Secretaries**	Neil Pike Annette Faulkner
Sales secretary	Dave Bromwich		
Publications Editor	Roger Key	**Records Secretary**	Neil Pike

External Representatives Dave Bromwich, Graeme Clayton, Roger Key, Ken Rowland. **Executive Committee** Mark Crick, Sara Bright, Annette Faulkner, Annette Binding, Ken Rowland. **Development Group** Dave Bromwich, Annette Faulkner, Roger Key & Phil Porter

Section Recorders

Geology	Mr David Robinson	**Macro Moths**	Mr Phil Porter
Bryophytes/Lichens	Prof. Mark Seaward	**Micro Moths**	Mr John Lamin Mr Colin Smith
Fungi	Mr Ken Rowland		
Higher plants	Mrs Irene Weston & Mr Marson Peet	**Flies**	Mr Andrew Godfrey & Mrs Jillian Mears
Molluscs	Mrs Vi Wilkin (N), Mr John Redshaw (S)	**Beetles**	Dr Roger Key
		Sawflies	Dr David Sheppard
Spiders	Mrs Annette Binding	**Ants, wasps & bees**	Dr Michael Archer
Isopods& Myriapods	Mr Neil Pike	**Birds**	Mr Jim Rance
Dragonflies	Mr John Redshaw	**Mammals & Herptiles**	Mr Roger Parsons
Shield bugs	Mrs Annette Binding	**Bats**	Mrs Annette Faulkner
Butterflies	Mr Allan Binding		

Secretary's Report, 2000 - Phil Porter

The year has not brought about the hoped-for progress in the search for a secure home for the county's botanical collections. While we are constantly monitoring developments both in the setting up of the proposed new museum and possibilities for a biological recording centre, the Union requires partners and cannot control these events despite our present financial resources. In the meantime these assets in the form of the COIF investments involving our recent bequests and the Esme Fairburn funding for botanical recording have lead the officers towards considerable responsibilities both to the Union and the Charities Commission. Your committee no longer has a straightforward task in managing all of this and we are now taking steps to enlarge the executive with new members to lighten the load. This sort of involvement is becoming more and more necessary and we shall be actively seeking out helpers from the membership.

The 'Lincolnshire Naturalist' continues to be a source of pride to the Union thanks to Roger Key's excellent editing and processing. We would be hard pressed to carry on this fine series of yearbooks without his services, but Roger has indicated that after the next couple of years he will no longer be able to put in the considerable amount of time required to produce it, unless, perhaps, all contributors sent in their material in the format set out inside the back cover of each volume. In this case he might be prepared to carry on so please, please help us to bring about this state of affairs for all our sakes!

The process of inputting the huge volume of botanical records has begun with Allan Binding being employed for three years through the Esme Fairburn funding mentioned above. Allan is our most accomplished 'inputter' and we are grateful to him for undertaking this massive task and to Dave Bromwich and Roger Parsons for setting up the funding.

The Wildnews bulletin, an e-mail service free to those with access to the internet, continues to grow and now has over 300 'members'. Set up by Roger Parsons and expanding on Roger Goy's original telephone service, the bulletin encourages all wildlife observers to contribute their records regardless of their expertise. Meanwhile, some very accomplished recorders now use the service and this mixture can only improve the general level of information gathered in the county.

Meetings in 2000

643rd Field Meeting January 22nd Sunday - Wolds Geology - field meeting with John Aram
February 19th Saturday - Presentation of Recorder's Reports - Hartsholme Country Park.
March 15th Saturday - AGM & Presidential Address - Hartsholme Country Park
644th Field Meeting April 29th Saturday. Chambers Plantation and Newball Wood - joint meeting with the Lincolnshire Bat Group.
645th Field Meeting May 21st Sunday. Burghley Park (Northamptonshire) - joint meeting with Peterborough Wildlife Group.
646th Field Meeting June 10th Saturday. Whisby Nature Park (Presidential Meeting)
647th Field Meeting July 9th Sunday. Belton Park, Grantham.
648th Field Meeting August 13th Sunday. Kirkby on Bain Pit. rescheduled from Grebby.
649th Field Meeting September 2nd Saturday. Owlet Plantation (Woodland Trust) and Pitt Hill Plantation near Gainsborough.
650th Field Meeting October 15th Sunday. Fungus Foray. Tortoiseshell Wood and Lawn Wood Lincolnshire Trust Reserves.
November 16th Thursday Christine Godfrey Memorial Lecture. 'The Life of a River' by Nick Bromwich of the Environment Agency. Jointly with the Lincolnshire Trust Lincoln Area Group at Christ's Hospital School, Lincoln.
December 2nd Saturday. Christmas Miscellany Quiz. - Hartsholme Country Park

Botanical highlights from 2000 LNU Field Meetings I Weston

The location of the first meeting was changed from Chambers Plantation and Newball Wood to Great West and Cocklode Wood. Ten members came to Cocklode where the spring woodland flora was at its best. Over 2000 plants of *Paris quadrifolia* were counted during a detailed search. A later visit was made to the Paris site with F.C. staff to discuss the management of this area. Cocklode has very fine small-leaved lime coppice and I cannot over-emphasize the importance of the Lincs Limewoods Conservation Agreement between the F.C., E.N. and the Lincs Wildlife Trust. Also in Cocklode *Molinia caerulea* (1 plant) and both species of *Calamagrostis* were recorded from one of the rides and in Great West Wood both large and smaller specimens of *Sorbus torminalis* were noted.

The presidential meeting at Whisby Nature Park was superb - *Ranunculus hederaceus* (P.

Porter) was new and an albino *Epipactis helleborine*, discovered earlier, was much photographed. Over 1000 spikes of *Dactylorhiza fuchsii* and over 5000 of *D. praetermissa* (estimated previously by P. Porter) were enjoyed and 25 plants of *Ophrys apifera* counted. Other plants of interest included dittander (4 plants), *Pilularia* (introduced), bracken (new for the reserve) and *Hieracium umbellatum* in quantity. The Burghley Park meeting, though out of the county, was well worked. Mistletoe in plenty near the car parks and very large specimens of planted sweet chestnut and small-leaved lime were seen. Notable was the occurrence of rue-leaved saxifrage *Saxifraga tridactylites* on roofs and walls of the estate houses and both wall rue and the saxifrage on Lion Bridge. Mrs Annette Faulkner sent in a list which was forwarded with that of V.W. and I.W. to Mr Crick, the meeting leader.

At Kirkby-on-Bain and Kirkby Moor, lists were made by I.W. and V.W. and Mr B. Redman conducted a tour in the latter reserve to highlight *Anagallis tenella* and *Frangula alnus* in quantity. Finally Owlet Plantation, a Woodland Trust Site, had good tree species including both *Quercus robur* and *Q. petraea* as well as their hybrid *Quercus x rosacea*.

Albino common helleborine at Whisby Nature Park photo A Scott

† Obituary - A. Denis Townsend (1926 - 2000) LNU President 1967.

Mrs. S Townsend and Mrs. I Weston.

Denis was a self taught ornithologist of much standing in Lincolnshire. He was interested in birds from the age of thirteen and was always a keen field worker. For many years after his Presidency he taught ornithological classes for the W.E.A. in Lincoln with many meetings held in the field. He made a detailed study over many years on the 'Birds of Bardney Sugar Beet Ponds' - the subject of his Presidential Address to the Union in 1967.

Denis served in the Navy and was seconded to the Norwegian Navy for the whole of World War 2, serving in Minesweepers and Patrol boats. He returned to his work in the Post Office in Lincoln and later became an executive there.

He contributed articles to British Birds during the sixties and also to 'Nature - Bulletin of the Hellenic Society for the Protection of Nature". He also compiled part of the Crete Bird Report from 1986 to 1999 and was currently working on this at the time of his death. He was a tireless supporter of the R.S.P.B. and the B.T.O. and had a deep felt concern for the countryside and for environmental issues.

Contributing to "The Lincolnshire Naturalist"

We are constantly on the lookout for full length articles or short notes, even a few lines which can be useful space fillers, on any aspect of our natural history, current or historic. Consider a note in "The Lincolnshire Naturalist" for any new or significant observations.

Articles should be typed. It would help the editor *tremendously* if they could either be e-mailed or sent on a 3½" computer disk with accompanying paper copy, in just about any word processor format (although don't let this put you off sending in an article) and in the format described here. Adding an ASCII and/or RTF text file in addition to the word-processed file will ensure that it can be incorporated directly. Most word processors can also output in ASCII and RTF. Drawings, black & white photographs, colour transparencies or negatives (please include a print) can be included. Colour illustration may be rendered to black & white. Please give a caption. Illustrations will be returned and edited text resubmitted to the author for approval and proof-reading before publication. Convention adopted for names - Latin names should be *italicised*, **not** (bracketed) or underlined and should follow the English name (where applicable) with no separating comma. English names should start with lower case letters unless incorporating other names warranting capitalization (eg Brandt's bat). References to journals and books should please be as below. Pease note and use the capitalization and italic convention.
WOODRUFFE-PEACOCK, Rev E.A., 1900. The Lincolnshire Naturalist's at Freiston. *The Naturalist*, **25**: 141-144.
DUDDINGTON, J. & JOHNSON, R. 1983. *The Butterflies and Larger Moths of Lincolnshire and South Humberside*. Lincolnshire Naturalists' Union. Lincoln. 299pp.
A guidance note is available and is sent out to recorders. Otherwise, please attempt to imitate the format in this issue of the Lincolnshire Naturalist.

The final copy date is **31st March** of the year in which the Transactions are to be issued. Please contact the editors directly if there is difficulty in meeting this deadline. If in any doubt as to whether your observation merits a note or an article, or you have any other queries please do get in touch with the editor Dr Roger Key, 67 Peterborough Road, Crowland, Lincs, PE6 0BB, tel 01723 210541, to whom texts should be sent.

Editorial - new editor needed in a couple of years

Roger Key

Once again we are in the enviable position of having quite a large amount of copy for our journal. Regarding photographs, surprisingly few authors include photos with their articles, despite the excellent photographic expertise within the LNU, which is more than apparent at the annual Recorders' meeting. Please, authors - let us have some more of your pictures, so that I don't have to illustrate the journal with so many of my own.

After eight years as editor I have decided to revert to my initial role in the LNU, just of beetle recorder, and have given a couple of years' notice that I will quit after the completion of volume 25 in 2003 (i.e. I'll do two more editions). With the centenary edition, I will then have edited 11 issues of 'Transactions of the LNU', now 'The Lincolnshire Naturalist'. During that time we have moved to the routine inclusion of photographs in the body of the text and adopted a colour cover and 16 colour plates at relatively little extra cost over the old black and white journal on which I started. Perhaps its now time for yet other changes.

A new editor is therefore needed - volunteers please! It is an interesting, if demanding job and I will be happy to work with the new editor, perhaps over the next couple of years while I'm still editor, and for a year or so after they have started if they want me to. The editor has, in recent years, automatically have a place on the Executive Committee of the LNU. Please get in touch if you're interested.

THE LINCOLNSHIRE NATURALIST

including
Transactions of the Lincolnshire Naturalists' Union
for 2000
Volume 25, Part 2, 2001

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cover photograph
The endemic hybrid between hairy and large bindweed *Calystegia x howittiorum* (page 90) at Scampton, named after Nottinghamshire botanists Brenda & Leaver Howitt
photo by Irene Weston